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TECHNICAL MEMORANDUM

CH2M HILL

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SUBJECT: Coyote Creek Reach 3, Soil and Groundwater Testing

PROJECT: BAW35901.GW.ZZ

This memorandum presents the results of the subsurface exploration and testing for the Coyote Creek Reach 3 flood control improvement project. The project is designed to help provide 100-year flood protection in the cities of San Jose and Milpitas, California, in conjunction with downstream flood control features. Because construction associated with flood control features will impact existing riparian vegetation, fisheries resources, and seasonal wetland habitat, a habitat mitigation and monitoring plan has been developed. The objectives of this plan include replacement of riparian and seasonal wetland habitat lost to flood facilities construction; habitat lost by the flood control project shall be replaced in kind with no net loss. In Reach 3, a total of 16.5 acres have been designated for riparian revegetation. These riparian revegetation areas occur within 7 sites, referred to as Sites 3 through 9.

The purpose of the subsurface exploration and testing was to determine the suitability of the soil and groundwater in Reach 3 of Coyote Creek for supporting riparian vegetation. The subsurface exploration was performed primarily between September 27 and November 18, 1993; supplemental wells CH-1 and CH-2 were installed between May 4 and May 5, 1994. Evaluation of site suitability for riparian vegetation comprised describing the subsurface lithology, estimating the depth to groundwater, and testing soil and water for a limited number of parameters. This technical memorandum presents the geologic setting, subsurface exploration methods, results, and conclusions of this investigation.

GEOLOGIC SETTING

ınta Clara Valley constitutes a broad depression trending south-southwest from ıthern end of San Francisco Bay. The northern section of Santa Clara Valley is :d by the Santa Cruz Mountains to the southwest, the Santa Theresa Hills and Creek Ridge to the southeast, the Diablo Range to the northeast, and San co Bay to the northwest.

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ENVPLAN

Streams, including Coyote Creek, Guadalupe River, and others, enter the Santa Clara Valley from surrounding hills, then flow generally northwest through the valley, towards San Francisco Bay. Alluvial sediments deposited by these streams constitute the basin fill in the Santa Clara Valley; each stream forms an alluvial fan at the base of the surrounding hills, and all the fans coalesce in the center of the basin.

Typical of alluvial deposits, sediments near the base of the hills are coarse and unstructured, while sediments near the basin center are finer and grouped into irregular and discontinuous localized lenses. Clark (1924) provided the following description and explanation of the highly irregular and discontinuous alluvial bodies buried within northern Santa Clara Valley:

"Santa Clara Valley is a region of aggradation; it is built up by deposits from streams that are very irregular in their flow, and from time to time change their courses. For this reason, the nature of the deposits changes rapidly from time to time and from place to place...

...Thus the whole deposit becomes a heterogeneous mass of irregular bodies of different kinds of materials" (p.26)

Coyote Creek Reach 3 is located near the center of the Santa Clara Valley. Therefore it is likely underlain by deposits typical of distall alluvial fans, including discontinuous lenses of fine sands, silts and clays.

SUBSURFACE EXPLORATION AND TESTING METHODS

A subsurface exploration program was conducted by CH2M HILL to verify the general subsurface conditions beneath Coyote Creek Reach 3. Subsurface lithology was described, limited soil properties were tested, and depth to groundwater was estimated during the field program.

SUBSURFACE LITHOLOGY INVESTIGATION

The subsurface lithology investigation involved drilling boreholes for 14 groundwater monitoring wells and 14 soil borings. Locations of the wells, borings, and surface soil samples are shown on Plates 1 through 5. Log sheets for the borings and wells are included in Appendix A.

The 28 borings were advanced using a truck mounted B-56 drill rig with 8-inch (outside diameter) hollow stem augers. Disturbed samples were obtained from the borings using a 2-inch (inside diameter) split-spoon sampler. Soils recovered during the drilling program were visually classified in general accordance with the ASTM Standard D 2488 method (American Society of Testing and Materials, 1990), and logged by CH2M HILL's engineer. Results of soil texture analysis were then used to classify soils using the Soil Conservation Service's textural triangle method (Soil Conservation Service, 1951).

SOIL SAMPLE COLLECTION

Twenty-four soil samples were collected from the boreholes for laboratory analysis. An additional 14 surface soil samples were collected for appraisal of surficial conditions. Soil samples were analyzed by A&L Western Agricultural Laboratories of Modesto California. Soil testing included pH, soil texture, chloride content, and nutrient analyses.

GROUNDWATER INVESTIGATIONS

The CH2M HILL wells and RESNA wells (described in the results section below) were monitored monthly as part of an on-going program to investigate hydrogeologic conditions in the revegetation sites. In addition, historical groundwater data available from other wells in the project area were reviewed, graphed, and are included in the results section of this technical memorandum.

The 12 wells that were installed by CH2M HILL in 1993 were monitored in November 1993, and monthly between February and July 1994 for depths to groundwater. The two wells installed in 1994 were monitored monthly between May and July, 1994. Groundwater samples collected from the 14 CH2M HILL monitoring wells were tested to determine groundwater conductivity, salinity, and pH. Salinity and conductivity readings were measured with a YSI model 33 S-C-T meter; pH readings were measured with an Oakton Testr-2 pH meter (an Orion 250 pH meter was used in November, 1993). Prior to testing, each well was purged with a teflon bailer until approximately two well volumes were removed from the well.

SUBSURFACE INVESTIGATION RESULTS

SUBSURFACE LITHOLOGY

Soils encountered during the field investigation included silt, sand, and clay loams. Three general profiles were encountered including:

- Sand and silt (loam) to greater than 25 feet below ground surface (bgs)
- Sand and silt (loam) underlain by clay at approximately 12 to 15 feet bgs
- Sand and silt (loam) underlain by clay at approximately 23 to 24 feet bgs

Soil boring logs are included in Appendix A. Soil types for each boring are summarized in Table 1.

The soil borings indicated that the shallow soils along Coyote Creek Reach 3 consist of generally loamy soils, with interbedded lenses of clays, silts, and sands. The clay, silts and sand lenses displayed little lateral continuity. This varying lithology is typical of distal alluvial fan and anastomosing stream bed deposits. Individual beds in alluvial fan deposits are rarely traceable over any appreciable distance, therefore attempting to interpolate individual sand or clay lenses between borings is often ineffectual.

A clay horizon above the groundwater table appears to exist approximately 12 to 14 feet bgs in many of the boring locations. Plate 6 shows locations of borings and wells where stiff clays were encountered above the water table. Plate 6 suggests two areas where localized clay layers apparently exist beneath significant portions of proposed revegetation sites. The northern portion of revegetation Site 6, and the southern half of revegetation Site 4 both contain conspicuous clusters of borings that encountered stiff clays above the water table.

To investigate the impact of this clay horizon on tree growth, three soil borings were installed adjacent to existing trees. Boring B13 was installed next to a mature walnut tree in revegetation Site 6; boring B3 was installed near a young valley oak in revegetation Site 4; and boring B1 was installed near a mature cottonwood in revegetation Site 3. The soil borings indicated that the top of a stiff clay layer exists between 12 and 14 feet below all three trees. This suggests that the presence of a stiff clay layer does not preclude growth of trees in the project area.

SOIL ANALYSIS

Results of the laboratory tests are summarized in Table 2; laboratory data sheets are included in Appendix B. Copies of the Chain of Custody sheets for the laboratory samples are included in Appendix C. Results of the soil testing are summarized in the following paragraphs.

The soil analyses presented below represent general soil conditions along Coyote Creek Reach 3. Jones and Stokes Associates (1994) note that fly ash may be present along the Hetch Hetchy pipeline easement, resulting in soils along this easement that may be unsuitable for revegetation.

Nutrients

The primary nutrients analyzed were phosphorus, in the form of phosphate and nitrogen in the form of nitrates. Revegetation Sites 5 and 6 had above normal levels of phosphate for riparian soil conditions, with concentrations of 67 ppm and 43 ppm, respectively, in the near surface soils (0.5 to 1.5 feet depth). In addition, revegetation Site 5 had elevated concentrations of nitrates both near the surface (0.5 to 1.5 feet) and a depth (7.5 to 9.0 feet). These elevated phosphate and nitrate levels are consistent with the current agricultural land use, where fertilizer is applied, and where discing can release nutrients from the soil. All other sites had relatively normal levels of phosphate which ranged from a low of 1 ppm to 39 ppm based on soil analyses. Natural riparian areas would normally tend to be low in nutrients with phosphate and nitrate generally less than 10 ppm. Elevated levels of nutrients would be expected to decrease rapidly after discontinuing additions of fertilizer and soil disturbance. Initially, the occurrence of the higher soil nutrient concentrations at revegetation Sites 5 and 6 could result in a higher invasion rate of non-native annual plants; these weedy species would only persist until the nutrient levels had been reduced over time. The elevated nutrient levels at revegetation Sites 5 and 6 are good to very good for plant riparian vegetation.

Soil Texture and Water Availability

Surface soils (0.5 to 1.5 feet) were generally sandy loams with relatively high percent (greater than 35 percent) sand and silt. Clay in the surface samples were low, generally less than 20 percent. Soil texture changed dramatically from the surface to depth with the following textural change; from sandy loam (0.5 to 1.5 feet), to sandy clay loam (2 to 3 feet), to clay loam (7.5 to 9.0 feet) to silty clay loam (greater than 10 feet depth). The general trend in soil texture reflects a shift from high percent sand near the surface to an increase in percent silt and clay at depth. The textural gradient observed is normal for alluvial deposits.

At most sites the soil texture at the surface and at depth could be considered good for establishing riparian vegetation; however, at revegetation Sites 6 (soil sample CH-15), and 7 (soil samples CH-11 and CH-12), the percent clay was higher at depths between 12 and 15 feet bgs. The groundwater table is approximately three to five feet below the surface of the clay layer at these two sites. The aquitard is probably not impenetrable by plant roots, and the shallow clay layers will likely not significantly alter the soil moisture profile above the groundwater table. Mr Wayne Verrill of Jones and Stokes Associates notes that similar clay layers in the Sacramento Valley and along the Consumnes River do not restrict riparian growth (Jones and Stokes, 1994). Furthermore, as noted in the subsurface lithology section of this report, a shallow clay layer was identified beneath existing vegetation, indicating that the clay will not restrict the growth of trees. Although the clay layer may not completely prevent tree root access to the groundwater, it conceivably could reduce the rate of growth of trees causing a reduced canopy height.

Salinity

Salinity, in terms of sodium chloride that could intrude into the riparian zone through tidal flow from the Bay, was not found to be very high. The investigation indicates that salinity should not be considered to be a limitation to the establishment of the freshwater riparian vegetation.

Other Factors

Other soil parameters measured, including organic matter, cations, pH, base saturation, and cation exchange, were found to represent normal levels for alluvial deposits. No strong trends with depth were observed for these parameters, other than the expected condition of pH increasing with depth. None of these factors would cause limitations in the establishment of riparian vegetation at the sites.

GROUNDWATER ELEVATIONS

Depth to groundwater and groundwater elevation data was available from three sources:

1) Groundwater elevations measured between July, 1983 and February, 1984 in 11 wells installed by the SCVWD along Coyote Creek (reaches 2 and 3).

2) Depth to groundwater and groundwater elevations measured between November 1991 and July, 1994 in 7 wells installed along Coyote Creek Reach 3 by RESNA Inc.

3) Depth to groundwater and groundwater elevations measured between November 1993, and July 1994 in 14 wells installed along Coyote Creek Reach 3 by CH2M HILL.

SCVWD Wells

Eleven shallow (15 feet deep) wells were installed along Coyote Creek by the SCVWD in 1983. These wells are referred to as wells #1 through #11. Wells #1 through #6 are located north of Reach 3, wells #7 through #11 are located in Reach 3. Plate 7 shows the locations of wells #7 through #11. Hydrographs of water elevation in the 11 SCVWD wells are shown in Figure 1 through Figure 11. Depth to water is not plotted, because ground elevation at these wells is currently unknown. Water elevation data for these SCVWD wells are presented on Table 3.

SCVWD wells #1, #2, and #3 are the northernmost wells of the 11 SCVWD wells, and they show the greatest fluctuation in water levels. A notable rise in water levels was observed in February 1984 in all three wells. The water level rise was 4 to 7 feet in these three wells. Data sheets indicate that surface water was ponded around well #3 in February, 1984, and the rise in water levels is likely influenced by this pond.

The five SCVWD wells located along Coyote Creek Reach 3 display a maximum water table rise of 1.59 feet between November, 1983 and February, 1984. The maximum water table rise along Coyote Creek Reach 3 was observed in well #7, located at the north end of the reach.

RESNA Wells

RESNA Inc. installed seven shallow wells along Coyote Creek Reach 3 during the Level II Investigation for Santa Clara Valley Water District Coyote Creek Project, Reach 3 (RESNA, 1992). The seven wells are shown on Plate 8, and are identified with an ETW well number. Hydrographs for the seven wells showing depth of water below ground surface are included in Figures 12 through 18. Water elevation data is presented on Table 4.

Hydrographs show that depth to groundwater in Coyote Creek Reach 3 is generally between 12 and 18 feet bgs, with one measurement of 10 feet bgs in well ETW-4. Water levels in the RESNA wells were generally shallower in the northern RESNA wells (ETW-4, ETW-5, and ETW-8); this trend of shallower groundwater levels at downstream locations is consistent with data collected from the SCVWD wells. Depth to water measured in the RESNA wells has fluctuated approximately 2.5 to 3 feet since November, 1991. Wells ETW-5, ETW-7, ETW-8, and ETW-10 displayed the lowest water levels in September, 1992; these low water levels were not repeated in September, 1993.

CH2M HILL Wells

As discussed in the Subsurface Exploration and Testing Methods section, CH2M HILL installed 14 wells groundwater monitoring wells in support of the Coyote Creek Reach 3 riparian revegetation activities. Locations of the 14 well are shown on Plate 8, and are identified with a CH prefix. Hydrographs for 12 of the wells, showing depth of water below ground surface are included in Figures 19 through 30; wells CH-4 and CH-8 were completed above a clay layer, and have remained dry. Water elevation data is presented on Table 5.

Hydrographs show that the depth to groundwater in the CH2M HILL wells is generally between 11.75 and 16.5 feet bgs. Depth to water is generally shallower in the northern CH2M HILL wells (wells CH-3 and CH-9), although this trend is not as strongly observed as in the RESNA and SCVWD wells.

The CH2M HILL wells generally display a water table rise of between 0.7 and 1.7 feet between November, 1993 and March 1994; this rise is consistent with the onset of the winter rainy season. Water level in all CH2M HILL wells slowly drop after March, responding to the cessation of the rainy season. The general trend in water levels is consistent with the water level trend observed in the RESNA wells over the same period of time.

Groundwater Flow Directions

General groundwater flow directions were drawn from analysis of all available data collected in November, 1993, March 1994, and July, 1994. Water elevations and inferred groundwater flow directions are displayed on Plates 9, 10, and 11. Groundwater generally flows sub-parallel to Coyote Creek, to the north, towards San Francisco Bay. Immediately adjacent to Coyote Creek, groundwater appears to flow away from Coyote Creek on all three maps. This suggests that in Reach 3, Coyote Creek is a losing stream throughout the year.

GROUNDWATER QUALITY

Salinity of the groundwater ranged between 0.5 and 2.0 parts per thousand (ppt); conductivity of the groundwater ranged between 0.60 and 1.85 millimhos per centimeter (mmhos/cm); and groundwater pH ranged between 6.6 and 7.5. A summary of the groundwater test results are presented in Table 6. The pH and salinity of the groundwater samples do not indicate that groundwater quality will restrict plant growth.

Historical evidence suggests that shallow groundwater (less than 50 feet deep) beneath Coyote Creek reach 3 may be susceptible to impacts from saltwater intrusion. The Saltwater Intrusion Investigation in the Santa Clara County Baylands Area, California (SCVWD, 1980) attempted to locate areas of saltwater intrusion in the shallowest groundwater zones of the Northern Santa Clara Valley. The 100 mg/l isochlor contour was used in the Saltwater Intrusion Investigation to define "area of definite intrusion." The Saltwater Intrusion Investigation shows that shallow groundwater beneath Reach 3 of Coyote Creek has contained over 100 mg/l chloride in the past. This intrusion appears to be associated with seawater incursion up Guadalupe River and Coyote Creek during high tides. This incursion has been aggravated by subsidence and mechanical deepening of Guadalupe River and Coyote Creek since the 1920s.

Standish Dam, constructed downstream of Coyote Creek Reach 3 to provide water to local agriculture, produceed an ancillary benefit of preventing tidal flows up Coyote Creek, effectively halting further saltwater intrusion. Standish dam has since been removed, however the SCVWD seasonally builds an earthen dam downstream from reach 3 to provide water to local agriculture. This dam effectively retards tides from migrating up Coyote Creek, preventing additional saltwater intrusion. The SCVWD is currently considering rebuilding Standish Dam. Evidence indicates that either Standish Dam, or a seasonal earthen dam will effectively arrest further saltwater intrusion along Coyote Creek.

In summary, the SCVWD 1980 saltwater intrusion study, in conjunction with the current groundwater sample results, indicate that Reach 3 of Coyote Creek is not seawater-intruded. Reach 3 has been susceptible to seawater intrusion in the past; no data, however indicates that appreciable amounts of seawater-intruded groundwater remain beneath Reach 3.

CONCLUSIONS

The subsurface exploration and testing program examined three factors that may impact the proposed revegetation along Coyote Creek Reach 3: soil quality, groundwater quality, and lithology. The investigation indicated:

- Soil quality is adequate for revegetation. Most soil parameters were within normal ranges, and no soil parameters suggested that the soil quality would inhibit plant growth.
- Groundwater generally occurs between 11.75 and 16.5 feet below ground surface. This depth to groundwater may fluctuate in response to extreme weather, such as droughts or floods. The lowest water levels recorded in the RESNA wells was 18.47 feet bgs, recorded in September, 1992.

- Groundwater elevations fluctuate seasonally in response to climatic conditions. The greatest fluctuations are at the north end of Reach 3, and can be up to 3.5 feet seasonally (well ETW-8). This fluctuation should not hinder the riparian revegitation plan.

- Groundwater generally flows sub-parallel to Coyote Creek, however immediately adjacent to Coyote Creek Reach 3, water from the creek appears to lose water to the shallow aquifers. This general flow direction was observed throughout the year.

- Groundwater has a neutral pH and moderate salinity. Although historically groundwater in Reach 3 has been susceptible to sea water intrusion, present-day groundwater quality does not appear to hinder the proposed revegetation plan.

- The predominant soil type ranges between a loam and a clayey sand loam. The lithologic structure that constitutes the loamy soils is composed of a series of interbedded sands silts and clays. Locally, a significant clay layer occurs approximately 12.5 feet below ground surface. This clay layer apparently does not impede a phreatophyte's ability to reach the groundwater table.

REFERENCES

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Santa Clara Valley Water District (Iwamura), 1980. Saltwater Intrusion Investigation in the Santa Clara County Baylands Area, California. September, 115 p.

Soil Conservation Service, 1951. Soil Survey Manual. U.S. Department of Agriculture Handbook 18, Washington, D.C. Cited in H.D. Foth, Fundamentals of Soil Science, 8th Ed., John Wiley & Sons, New York.

Table 1
Summary of Field Data
Coyote Creek Reach 3

Boring Number	Revegetation Site	Depth (ft)	General Soil Condition	Comments
CH-1	L	25.0	Loamy	
CH-2	3	25.0	Clay at 12 ft bgs	Free water at 20 ft
CH-3	4	25.0	Loamy	
CH-4	4	12.5	Clay at 12 ft bgs	No free water
CH-5	5	25.0	Loamy	
CH-6	6	25.0	Loamy	
CH-7	6	25.0	Loamy	
CH-8	6	12.5	Clay at 12 ft bgs	No free water
CH-9	6	25.0	Loamy	
CH-10	6	25.0	Loamy	
CH-11	7	25.0	Clay at 14 ft bgs	No free water
CH-12	7	20.0	Clay at 15 ft bgs	No free water
CH-13	8	25.0	Loamy	
CH-15	6	20.0	Clay at 12 ft bgs	No free water
B-1	3	15.0	Clay at 13 ft bgs	No free water
B-2	4	9.0	Loamy	
B-3	4	15.0	Clay at 13 ft bgs	No free water
B-4	4	25.0	Clay at 13 ft bgs	No free water
B-5	5	15.0	Loamy	
B-6	5	14.0	Clay at 13 ft bgs	No free water
B-7	6	14.0	Loamy	
B-8	6	26.5	Clay at 12 ft bgs	No free water
B-9	6	16.0	Clay at 12 ft bgs	No free water
B-10	6	16.0	Loamy	
B-11	6	16.0	Clay at 11 ft bgs	No free water
B-12	6	13.0	Clay at 12 ft bgs	No free water
B-13	6	15.0	Clay at 14 ft bgs	No free water
B-14	6	10.5	Loamy	

Table 2
Summary of Laboratory Data for Soil Samples
Coyote Creek Reach 3

Sample Location	Sample Depth (ft)	Organic Matter		Phosphorus		Potassium (ppm)	Magnesium (ppm)	Calcium (ppm)	Sodium (ppm)	pH	Cation Exchange Capacity	Percent Base Saturation (Calculated)				Nitrate (ppm)	Soluble Salts (mmhos/cm)	Chloride (ppm)	Soil Texture		
		(%)	(lb/A)	P_1 (ppm)	P_2 (ppm)							K	Mg	Ca	Na				Sand (%)	Silt (%)	Clay (%)
SITE L																					
CH-1	2.0-3.0	0.9	48	16	29	178	426	243	31	7.5	5.3	8.6	66.0	22.9	0.0	3	0.4	51	37	34	29
CH-1	9.0-10.0	1.6	62	5	20	121	561	1890	344	6.9	16.1	1.9	28.7	58.6	1.5	1	2.6	150	49	26	25
SITE 3																					
CH-2	2.0-3.0	1.0	50	22	20	128	461	1950	47	6.9	14.3	2.3	26.6	68.2	1.5	6	0.7	98	37	36	27
CH-2	11.0-12.0	1.1	52	5	12	164	1670	2600	238	7.2	28.2	1.5	48.8	46.1	0.0	1	0.8	69	15	28	57
SS-15	0.5-1.5	0.9	48	18	12	260	294	1250	34	7.3	9.5	7.0	25.8	65.7	1.6	17	0.7	26	52	31	17
B-1	7.5-9.0	1.0	50	2	5	72	556	1630	174	7.3	13.7	1.3	33.8	59.4	5.5	7	1.5	328	13	49	38
B-1	14.0-15.0	0.9	48	2	13	146	801	2160	197	7.9	18.7	2.0	35.7	57.7	4.6	6	0.5	53	16	41	43
SITE 4																					
SS-14	0.5-1.5	0.9	48	39	32	488	293	1210	37	7.3	9.9	12.6	24.7	61.1	1.6	5	0.5	44	36	47	17
B-2	2.0-3.0	1.4	58	15	19	236	386	1480	55	7.5	11.5	5.3	28.1	64.6	2.1	21	0.6	27	36	39	25
B-2	7.5-9.0	0.6	42	3	5	37	419	1340	186	8.1	11.1	0.9	31.5	60.4	7.3	20	0.6	27	32	43	25
SS-13	0.5-1.5	1.1	52	77	49	449	250	1220	23	7.3	9.4	12.2	22.1	64.7	1.1	10	0.4	9	38	41	21
B-3	7.5-9.0	0.8	46	5	8	405	546	1380	80	7.9	12.8	8.1	35.4	53.8	2.7	6	0.5	27	14	51	35
B-3	12.0-13.0	0.7	44	4	9	156	710	1760	216	8.0	16.1	2.5	36.9	54.8	5.8	7	0.6	80	26	44	30
SITE 5																					
B-5	7.5-9.0	0.7	44	3	3	63	756	1200	227	7.7	13.4	1.2	46.8	44.6	7.3	47	1.2	115	46	39	15
SS-11	0.5-1.5	1.0	50	67	36	361	273	1280	35	7.3	9.8	9.5	23.3	65.6	1.6	10	0.5	18	26	41	33
SS-10	0.5-1.5	1.4	58	19	18	260	340	1230	45	6.5	10.6	6.3	26.6	57.8	1.8	63	0.9	9	26	47	27
B-6	7.5-9.0	1.0	50	1	9	42	586	1460	153	7.7	13.0	0.8	37.7	56.3	5.1	4	0.8	115	18	51	31
B-6	12.0-13.0	1.7	64	26	17	383	566	1840	53	7.3	15.1	6.5	31.2	60.8	1.5	18	0.6	27	36	37	27
SITE 6																					
SS-7	0.5-1.5	1.0	50	43	41	250	406	1490	35	7.1	11.6	5.5	29.1	64.1	1.3	20	0.5	35	26	51	23
SS-6	0.5-1.5	0.9	48	28	18	146	421	1370	47	7.6	10.9	3.4	32.1	62.6	1.9	16	0.4	27	28	51	21
CH-15	6.0-7.5	1.0	50	11	13	59	438	1820	184	7.0	13.7	1.1	26.6	66.4	5.8	19	1.4	93	30	47	23
CH-15	12.0-13.0	1.2	54	6	11	127	1330	1800	768	7.9	23.7	1.4	46.7	37.9	14.1	21	0.8	53	22	27	51
SS-5	0.5-1.5	1.0	50	29	21	212	368	1210	40	7.5	9.8	5.5	31.2	61.5	1.8	8	0.4	27	28	49	23
B-14	2.0-3.0	0.7	44	9	14	142	417	1400	156	7.7	11.5	3.2	30.2	60.8	5.9	11	0.4	27	40	45	15
B-14	9.0-10.5	0.5	40	2	3	51	952	1200	196	7.9	14.9	0.9	53.2	40.2	5.7	18	1.0	106			
SS-4	0.5-1.5	1.0	50	25	20	153	380	1380	57	7.8	10.7	3.7	29.6	64.4	2.3	7	0.5	27	38	41	21
SITE 7																					
SS-2	0.5-1.5	0.8	46	16	10	96	369	1230	53	7.4	9.7	2.5	31.7	63.4	2.4	8	0.4	27	42	43	15
CH-11	2.0-3.0	1.1	52	5	224	71	446	1370	384	8.1	12.4	1.5	29.9	55.2	13.4	4	0.7	80	22	51	27
CH-11	7.5-9.0	0.7	44	3	4	60	966	1400	179	7.5	16.0	1.0	50.4	43.8	4.9	29	2.1	257	16	57	27
CH-11	14.0-15.5	0.8	46	3	4	97	1962	1640	321	8.0	26.2	0.9	62.4	31.3	5.3	6	1.2	141	14	29	57
SS-3	0.5-1.5	0.9	48	21	13	98	409	1460	46	7.6	11.2	2.3	30.5	65.4	1.8	6	0.3	27	36	41	23
CH-12	7.5-9.0	0.9	48	1	5	60	584	1360	229	7.9	12.8	1.2	38.0	53.1	7.8	7	0.5	44	13	66	21
CH-12	15.0-16.5	0.8	46	2	5	120	1080	2210	278	7.4	21.6	1.4	41.7	51.2	5.6	2	0.5	53	26	11	63
SITE 8																					
SS-8	0.5-1.5	0.9	48	25	30	161	368	1200	72	7.6	9.8	4.2	31.3	61.3	3.2	38	0.6	18	34	43	23
CH-13	2.0-3.0	0.6	42	6	5	80	256	1360	28	7.7	9.3	2.2	23.0	73.4	1.3	4	0.3	9	58	33	9
CH-13	7.5-9.0	0.5	40	5	8	53	571	960	67	7.7	10.0	1.4	47.7	48.1	2.9	9	0.7	44	78	15	7
SITE 9																					
SS-1	0.5-1.5	2.0	70	33	28	407	387	1690	27	7.2	12.8	8.1	25.1	65.8	0.9	29	0.7	27	48	37	15
SS-9	0.5-1.5	1.2	54	23	17	229	339	1420	33	7.3	10.7	5.5	26.5	66.6	1.3	29	0.7	35	36	47	17

Table 3
Water Table Elevations, SCVWD Wells

Date	Well #1	Well #2	Well #3	Well #4	Well #5	Well #6	Well #7	Well #8	Well #9	Well #10	Well #11
5-Jul-83	NA	3.7	4.8	5.2	6.5	8.8					
27-Jul-83	NA	2.3	3.8	4.7	6.1	8.5					
17-Aug-83	1.2	1.7	3.5	4.5	6	8.5					
21-Sep-83	0.6	1.2	2.9	3.7	5.3	7.9					
3-Nov-83	NA	2.10	2.90	3.60	5.20	7.70					
9-Nov-83							9.70			14.66	
14-Nov-83								10.84	12.81		18.35
24-Feb-84	4.80	5.60	9.90	5.00	NA	7.40	11.29	10.29	12.80	15.46	18.53

Table 4
Water Table Elevations, RESNA Wells

	ETW-1		ETW-2		ETW-3		ETW-4	
Date	Depth from Ground (ft)	Water Elevation (ft MSL)	Depth from Ground (ft)	Water Elevation (ft MSL)	Depth from Ground (ft)	Water Elevation (ft MSL)	Depth from Ground (ft)	Water Elevation (ft MSL)
21-Nov-91	17.45	19.29	16.49	17.01	14.77	11.78	12.56	9.39
18-Mar-92	15.55	21.19	15.36	18.14	13.19	13.36	10.21	11.74
24-Jun-92	16.54	20.20	16.24	17.26	13.95	12.60	11.81	10.14
28-Sep-92	16.96	19.78	16.51	16.99	14.51	12.04	12.30	9.65
1-Jul-93	16.30	20.44	16.09	17.41	14.45	12.10	11.86	10.09
1-Aug-93	15.12	21.62	16.26	17.24	14.92	11.63	11.83	10.12
1-Sep-93	16.33	20.41	16.32	17.18	14.93	11.62	12.27	9.68
1-Oct-93	16.75	19.99	16.24	17.26	15.37	11.18	N/A	N/A
1-Nov-93	16.87	19.87	16.41	17.09	15.58	10.97	N/A	N/A
1-Dec-93	16.45	20.29	14.05	19.45	15.08	11.47	N/A	N/A
1-Jan-94	16.62	20.12	16.07	17.43	14.91	11.64	11.86	10.09
1-Feb-94	16.29	20.45	15.78	17.72	14.22	12.33	12.31	9.64
1-Mar-94	15.75	20.99	15.26	18.24	13.33	13.22	11.40	10.55
1-Apr-94	16.06	20.68	15.91	17.59	13.58	12.97	11.81	10.14
1-May-94	16.06	20.68	15.82	17.68	13.77	12.78	11.58	10.37
1-Jun-94	16.20	20.54	16.16	17.34	13.85	12.70	12.15	9.80
1-Jul-94	16.25	20.49	17.24	16.26	14.25	12.30	12.31	9.64

	ETW-5		ETW-8		ETW-10	
Date	Depth from Ground (ft)	Water Elevation (ft MSL)	Depth from Ground (ft)	Water Elevation (ft MSL)	Depth from Ground (ft)	Water Elevation (ft MSL)
21-Nov-91	14.86	8.24	14.63	8.28	15.90	16.42
18-Mar-92	13.14	9.96	12.53	10.38	14.52	17.8
24-Jun-92	14.94	8.16	13.80	9.11	15.58	16.74
28-Sep-92	17.77	5.33	17.09	5.82	18.47	13.85
1-Jul-93	15.37	7.73	14.79	8.12	N/A	N/A
1-Aug-93	14.89	8.21	15.10	7.81	N/A	N/A
1-Sep-93	15.19	7.91	14.68	8.23	N/A	N/A
1-Oct-93	14.46	8.64	15.60	7.31	N/A	N/A
1-Nov-93	15.42	7.68	15.81	7.10	N/A	N/A
1-Dec-93	14.33	8.77	16.00	6.91	N/A	N/A
1-Jan-94	14.25	8.85	14.52	8.39	15.54	16.78
1-Feb-94	14.27	8.83	13.58	9.33	15.24	17.08
1-Mar-94	12.81	10.29	12.43	10.48	14.76	17.56
1-Apr-94	14.08	9.02	12.31	10.6	15.08	17.24
1-May-94	13.98	9.12	13.54	9.37	15.2	17.12
1-Jun-94	14.96	8.14	13.83	9.08	15.45	16.87
1-Jul-94	15.14	7.96	14.27	8.64	15.51	16.81

Table 5
Water Table Elevations, CH2M HILL Wells

	CH-1		CH-2		CH-3		CH-4	
Date	Depth from Ground (ft)	Water Elevation (ft MSL)	Depth from Ground (ft)	Water Elevation (ft MSL)	Depth from Ground (ft)	Water Elevation (ft MSL)	Depth from Ground (ft)	Water Elevation (ft MSL)
4-Nov-93	N/A	N/A	N/A	N/A	13.28	9.77	N/A	N/A
1-Feb-94	N/A	N/A	N/A	N/A	12.04	11.01	N/A	N/A
1-Mar-94	N/A	N/A	N/A	N/A	11.75	11.30	N/A	N/A
1-Apr-94	N/A	N/A	N/A	N/A	12.04	11.01	N/A	N/A
1-May-94	10.44	9.06	11.74	8.62	12.60	10.45	N/A	N/A
1-Jun-94	10.95	8.55	12.52	7.84	12.91	10.14	N/A	N/A
1-Jul-94	11.10	8.40	12.82	7.54	13.06	9.99	N/A	N/A

	CH-5		CH-6		CH-7		CH-8	
Date	Depth from Ground (ft)	Water Elevation (ft MSL)	Depth from Ground (ft)	Water Elevation (ft MSL)	Depth from Ground (ft)	Water Elevation (ft MSL)	Depth from Ground (ft)	Water Elevation (ft MSL)
4-Nov-93	15.33	10.68	13.98	15.41	14.69	15.46	N/A	N/A
1-Feb-94	14.49	11.52	13.58	15.81	14.17	15.98	N/A	N/A
1-Mar-94	13.99	12.02	13.13	16.26	13.74	16.41	N/A	N/A
1-Apr-94	14.18	11.83	13.67	15.72	14.39	15.76	N/A	N/A
1-May-94	14.38	11.63	13.58	15.81	14.44	15.71	N/A	N/A
1-Jun-94	14.43	11.58	13.92	15.47	14.67	15.48	N/A	N/A
1-Jul-94	14.68	11.33	14.02	15.37	14.80	15.35	N/A	N/A

	CH-9		CH-10		CH-11		CH-12	
Date	Depth from Ground (ft)	Water Elevation (ft MSL)	Depth from Ground (ft)	Water Elevation (ft MSL)	Depth from Ground (ft)	Water Elevation (ft MSL)	Depth from Ground (ft)	Water Elevation (ft MSL)
4-Nov-93	13.01	14.01	14.43	11.84	16.48	18.21	15.78	16.30
1-Feb-94	12.29	14.72	13.24	13.03	15.99	18.70	15.07	17.01
1-Mar-94	12.07	14.95	12.71	13.56	15.78	18.91	14.77	17.31
1-Apr-94	12.48	14.54	12.79	13.48	16.27	18.42	15.25	16.83
1-May-94	12.46	14.56	12.99	13.28	16.09	18.60	15.25	16.83
1-Jun-94	12.76	14.26	13.17	13.10	16.41	18.28	15.52	16.56
1-Jul-94	12.99	14.03	13.42	12.85	16.45	18.24	15.65	16.43

	CH-13		CH-15	
Date	Depth from Ground (ft)	Water Elevation (ft MSL)	Depth from Ground (ft)	Water Elevation (ft MSL)
4-Nov-93	14.23	16.73	14.68	12.57
1-Feb-94	15.71	15.25	13.57	13.68
1-Mar-94	13.28	17.68	13.01	14.24
1-Apr-94	13.94	17.02	13.30	13.95
1-May-94	13.86	17.70	13.36	13.89
1-Jun-94	14.16	16.80	13.53	13.72
1-Jul-94	14.22	16.74	13.76	13.49

Table 6
Summary of Groundwater Quality Data
Coyote Creek Reach 3, November 1993 through July 1994

	CH-1			CH-2			CH-3			CH-4		
Date	pH	Salinity (ppt)	Conductivity (mmho/cm)	pH	Salinity (ppt)	Conductivity (mmho/cm)	pH	Salinity (ppt)	Conductivity (mmho/cm)	pH	Salinity (ppt)	Conductivity (mmho/cm)
4-Nov-93	N/A	N/A	N/A	N/A	N/A	N/A	7.00	1.50	1.60	NA	NA	NA
1-Feb-94	N/A	N/A	N/A	N/A	N/A	N/A		1.00	0.90	NA	NA	NA
1-Mar-94	N/A	N/A	N/A	N/A	N/A	N/A	7.40	1.00	1.00	NA	NA	NA
1-Apr-94	N/A	N/A	N/A	N/A	N/A	N/A		1.00	1.00	NA	NA	NA
1-May-94		1.50	1.40		1.50	1.10		1.00	1.00	NA	NA	NA
1-Jun-94	6.60	0.50	1.30	7.10	0.50	0.90	7.30	0.50	0.80	NA	NA	NA
1-Jul-94		0.50	1.45		0.50	1.00		0.50	0.75	NA	NA	NA

	CH-5			CH-6			CH-7			CH-8		
Date	pH	Salinity (ppt)	Conductivity (mmho/cm)	pH	Salinity (ppt)	Conductivity (mmho/cm)	pH	Salinity (ppt)	Conductivity (mmho/cm)	pH	Salinity (ppt)	Conductivity (mmho/cm)
4-Nov-93	7.2	1.0	0.95	7.3	1.3	1.15	7.4	1.0	1.10	NA	NA	NA
1-Feb-94		1.50	1.00		1.00	1.20		1.00	1.05	NA	NA	NA
1-Mar-94	7.10	1.00	1.10	6.90	1.00	1.20	7.10	1.00	1.10	NA	NA	NA
1-Apr-94		1.50	1.20		1.00	1.10		1.00	1.10	NA	NA	NA
1-May-94		1.50	1.30		1.50	1.30		1.50	1.10	NA	NA	NA
1-Jun-94	6.90	1.00	1.75	6.90	0.50	1.00	6.90	0.50	1.00	NA	NA	NA
1-Jul-94		0.50	1.00		0.50	1.15		0.50	1.00	NA	NA	NA

	CH-9			CH-10			CH-11			CH-12		
Date	pH	Salinity (ppt)	Conductivity (mmho/cm)	pH	Salinity (ppt)	Conductivity (mmho/cm)	pH	Salinity (ppt)	Conductivity (mmho/cm)	pH	Salinity (ppt)	Conductivity (mmho/cm)
4-Nov-93	7.3	1.0	0.85	7.3	1.0	1.00	7.5	1.5	1.20	7.2	1.5	1.30
1-Feb-94		1.00	0.85		1.00	0.80		1.00	1.10		1.50	1.20
1-Mar-94	7.00	0.50	0.90	7.00	1.00	0.80	7.00	1.50	1.40	6.90	0.50	1.10
1-Apr-94		1.00	0.90		1.00	1.10		1.50	1.30		1.00	1.10
1-May-94		1.00	1.00		1.00	1.00		1.50	1.30		1.50	1.20
1-Jun-94	6.80	0.30	0.80	6.90	0.50	0.90	7.10	0.50	1.10	6.90	0.50	1.00
1-Jul-94		0.50	0.90		0.50	1.00		0.5	1.2		0.5	1.1

	CH-13			CH-15		
Date	pH	Salinity (ppt)	Conductivity (mmho/cm)	pH	Salinity (ppt)	Conductivity (mmho/cm)
4-Nov-93	7.3	1.0	1.00	7.5	1.5	1.85
1-Feb-94		0.50	0.60		1.50	1.60
1-Mar-94	7.10	1.50	1.10	7.30	1.00	1.00
1-Apr-94		1.00	1.00		1.50	1.70
1-May-94		1.00	1.30		1.30	1.70
1-Jun-94	7.00	0.50	0.90	7.10	0.50	1.50
1-Jul-94		0.5	0.9		1	1.7

Well 1

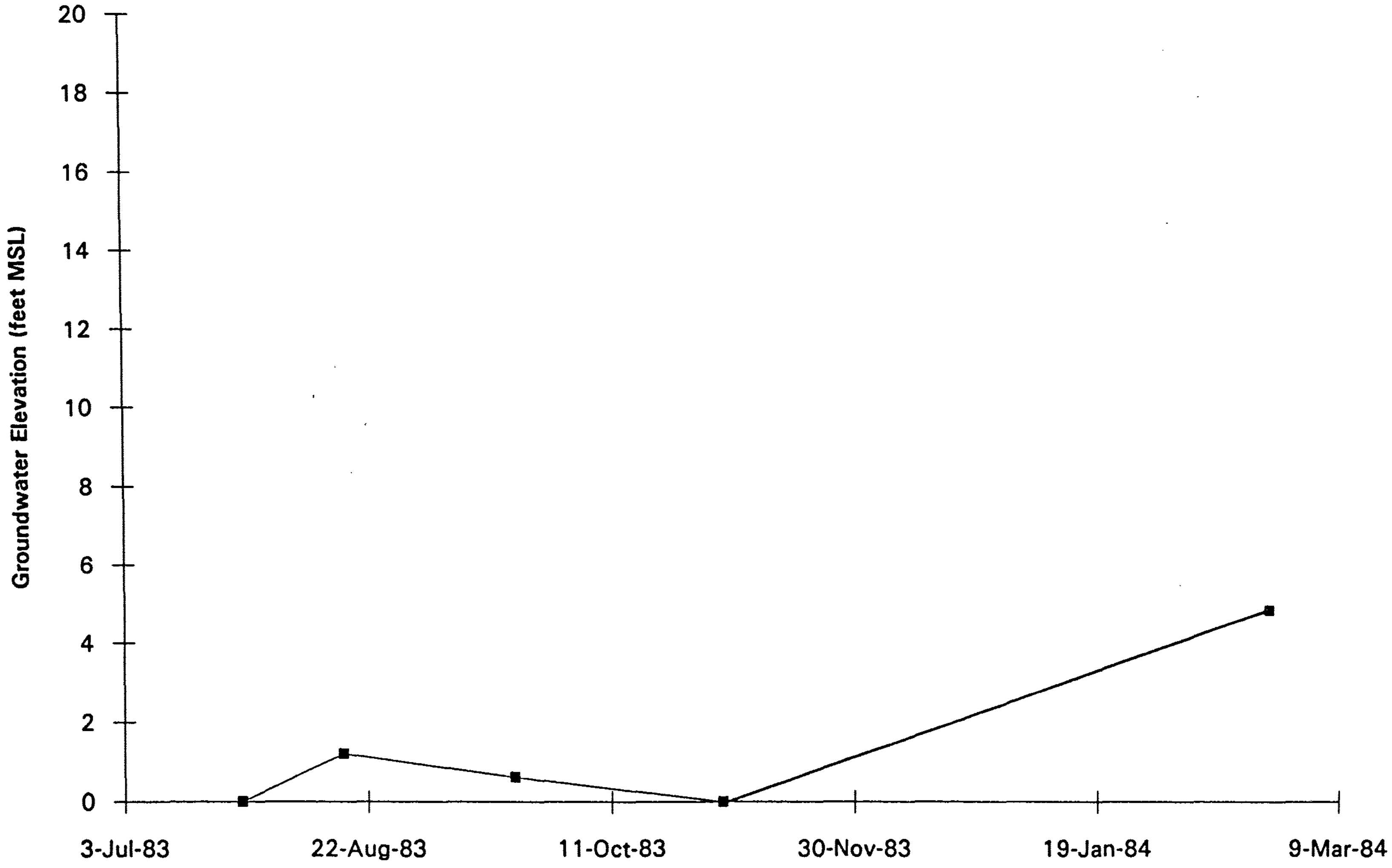
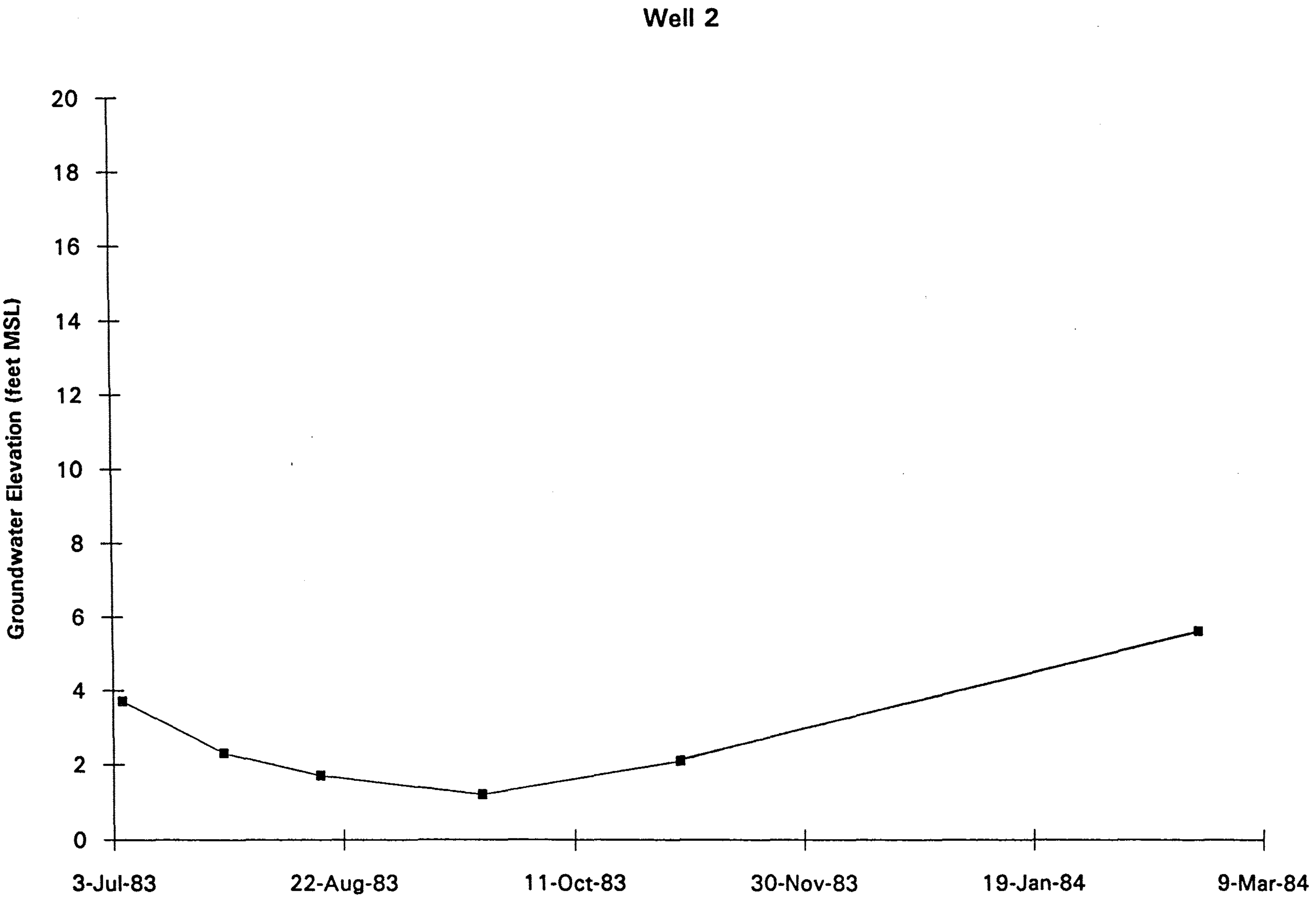


Figure 1



Well 2
Groundwater Elevation (feet MSL)
20
18
16
14
12
10
8
6
4
2
0
3-Jul-83
22-Aug-83
11-Oct-83
30-Nov-83
19-Jan-84
9-Mar-84

Figure 2

Well 3

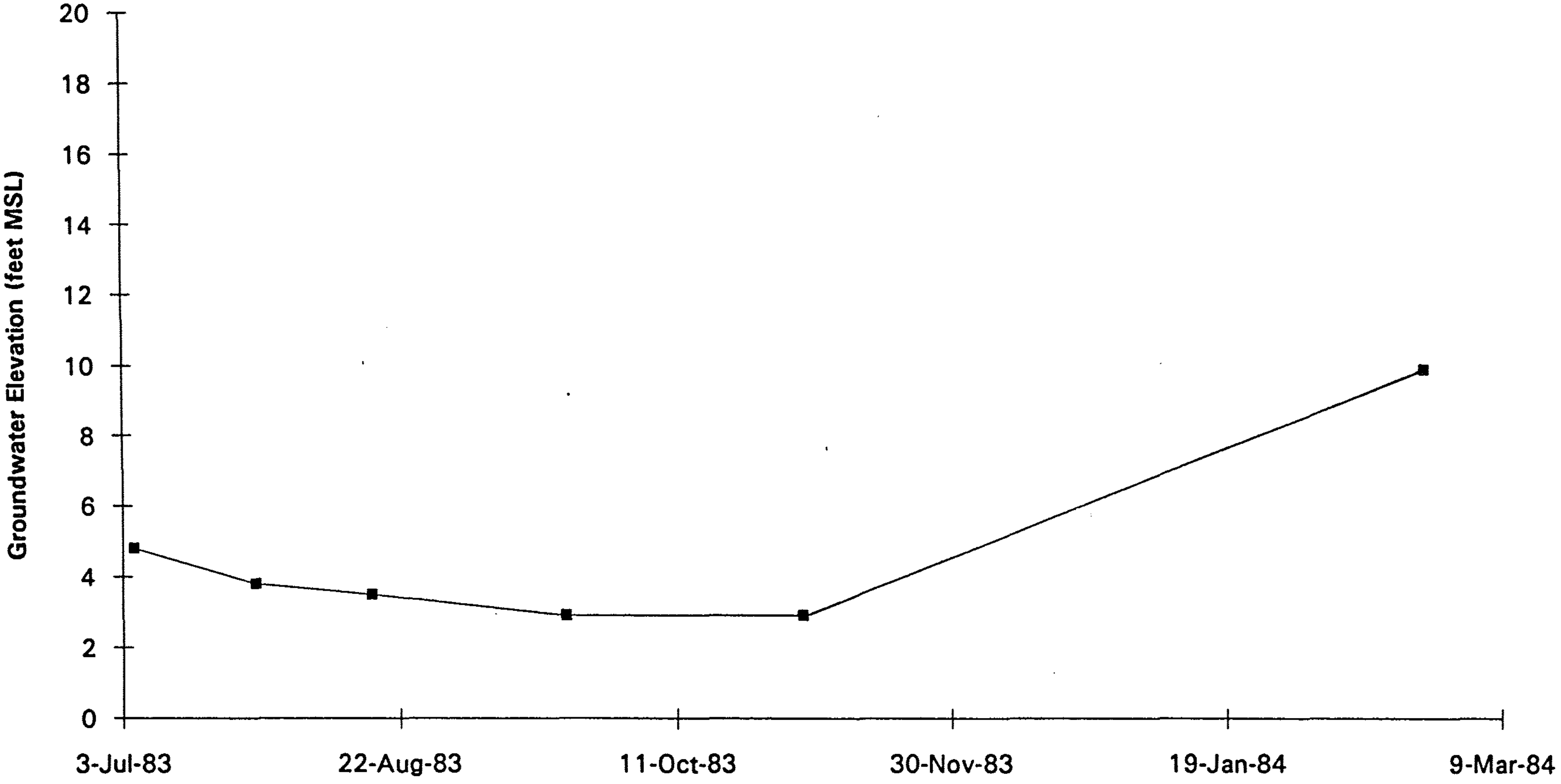
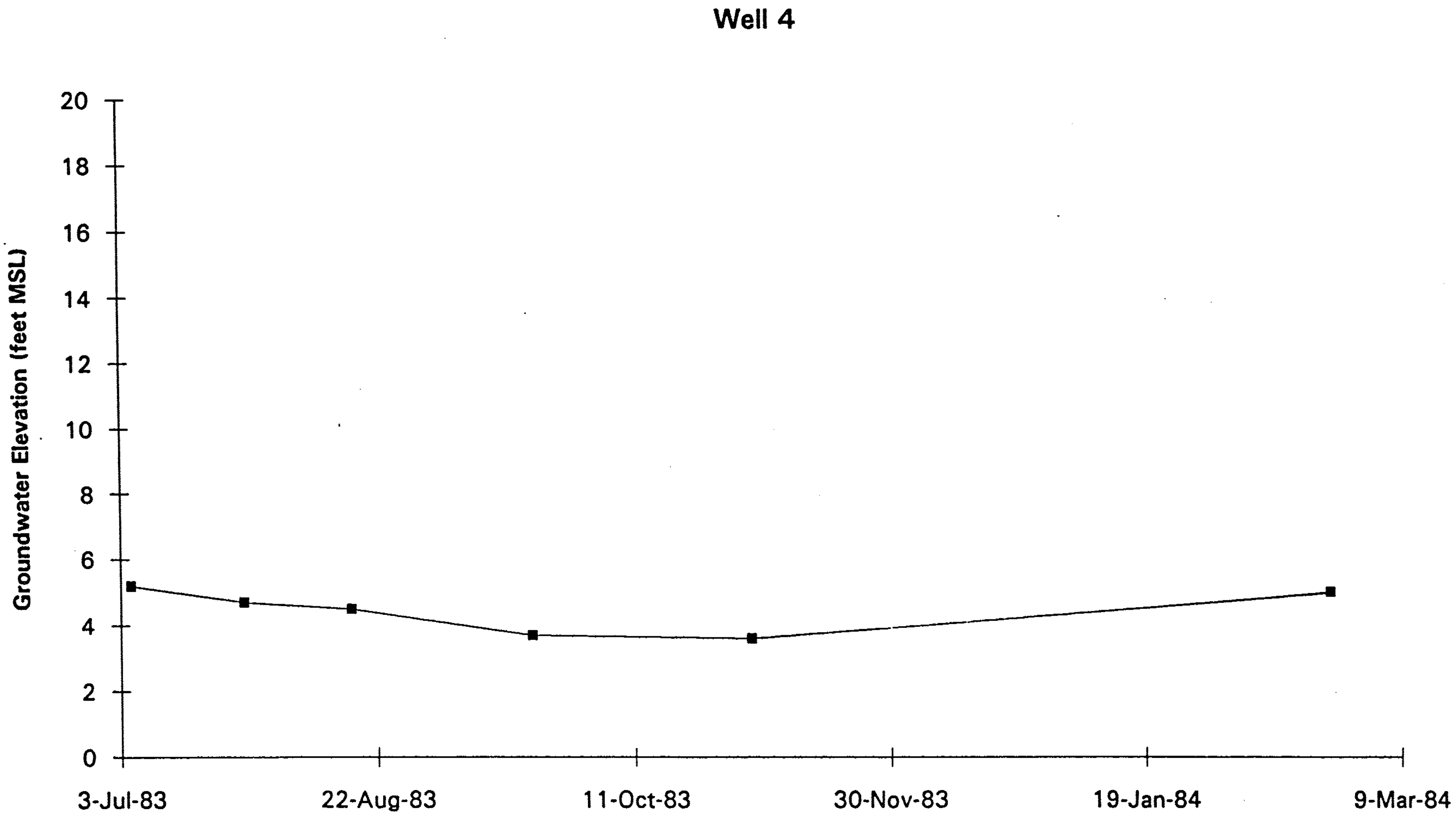


Figure 3



Well 4
Groundwater Elevation (feet MSL)
20
18
16
14
12
10
8
6
4
2
0
3-Jul-83
22-Aug-83
11-Oct-83
30-Nov-83
19-Jan-84
9-Mar-84

Figure 4

Well 5

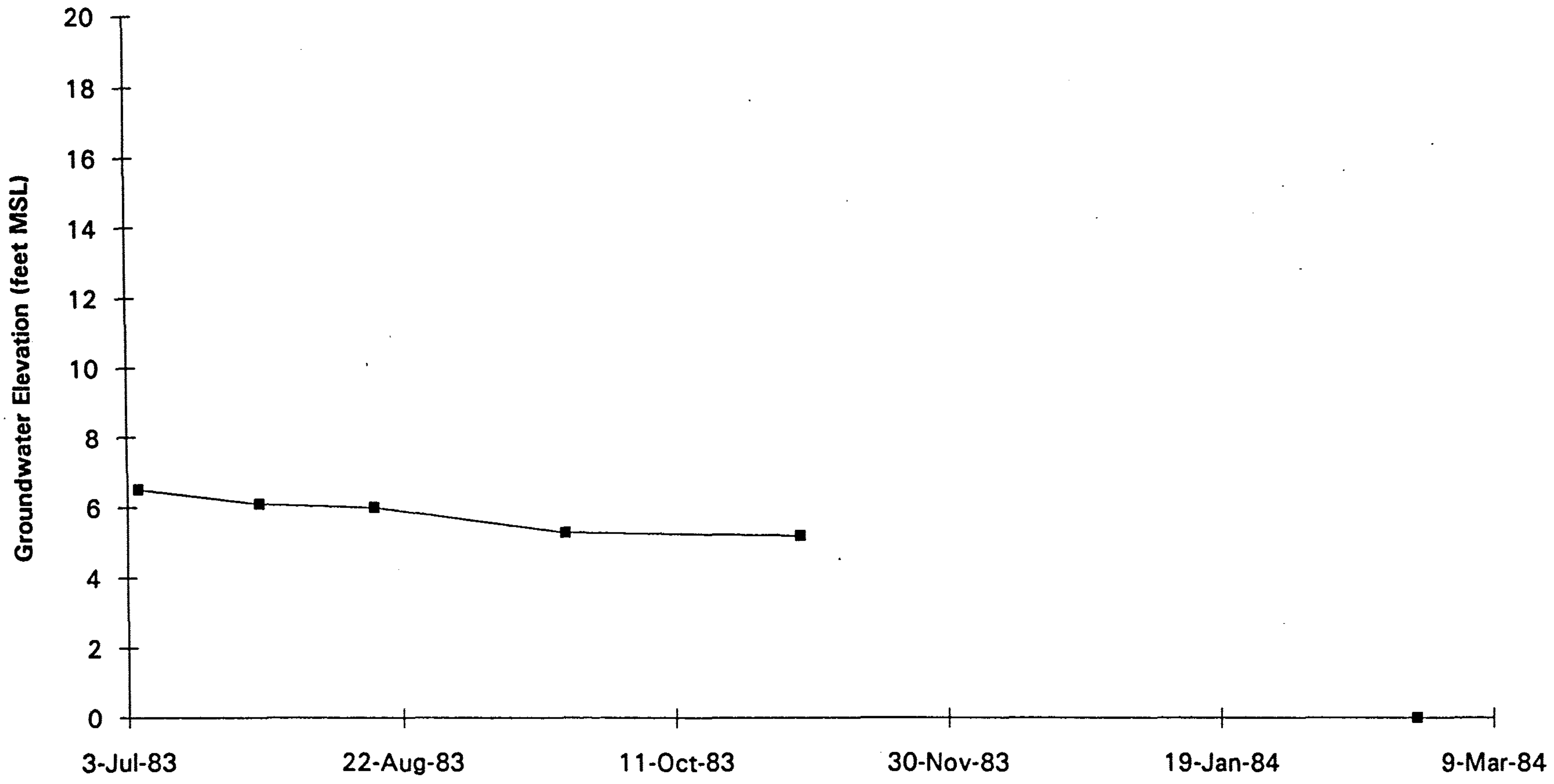


Figure 5

Well 6

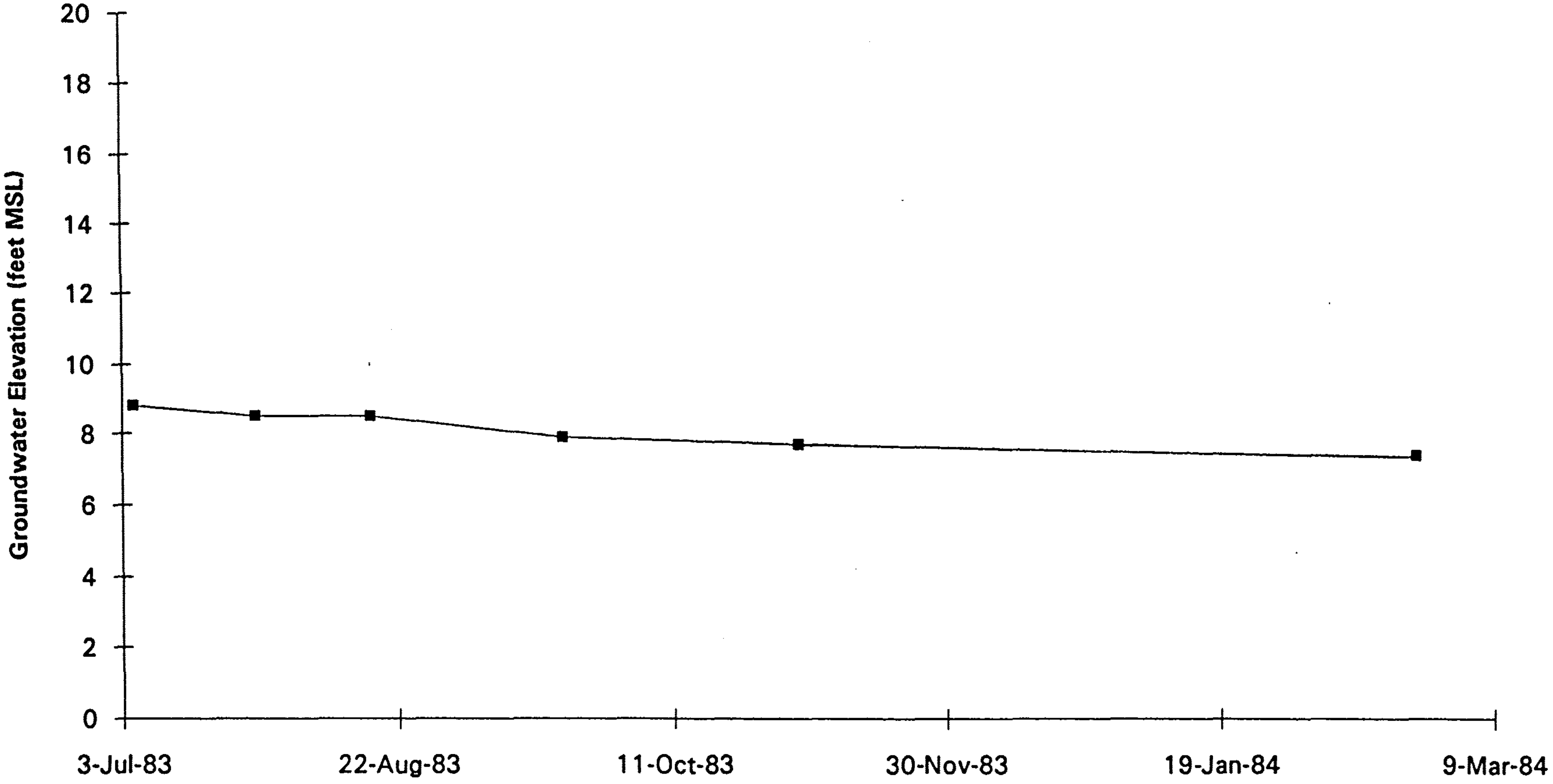


Figure 6

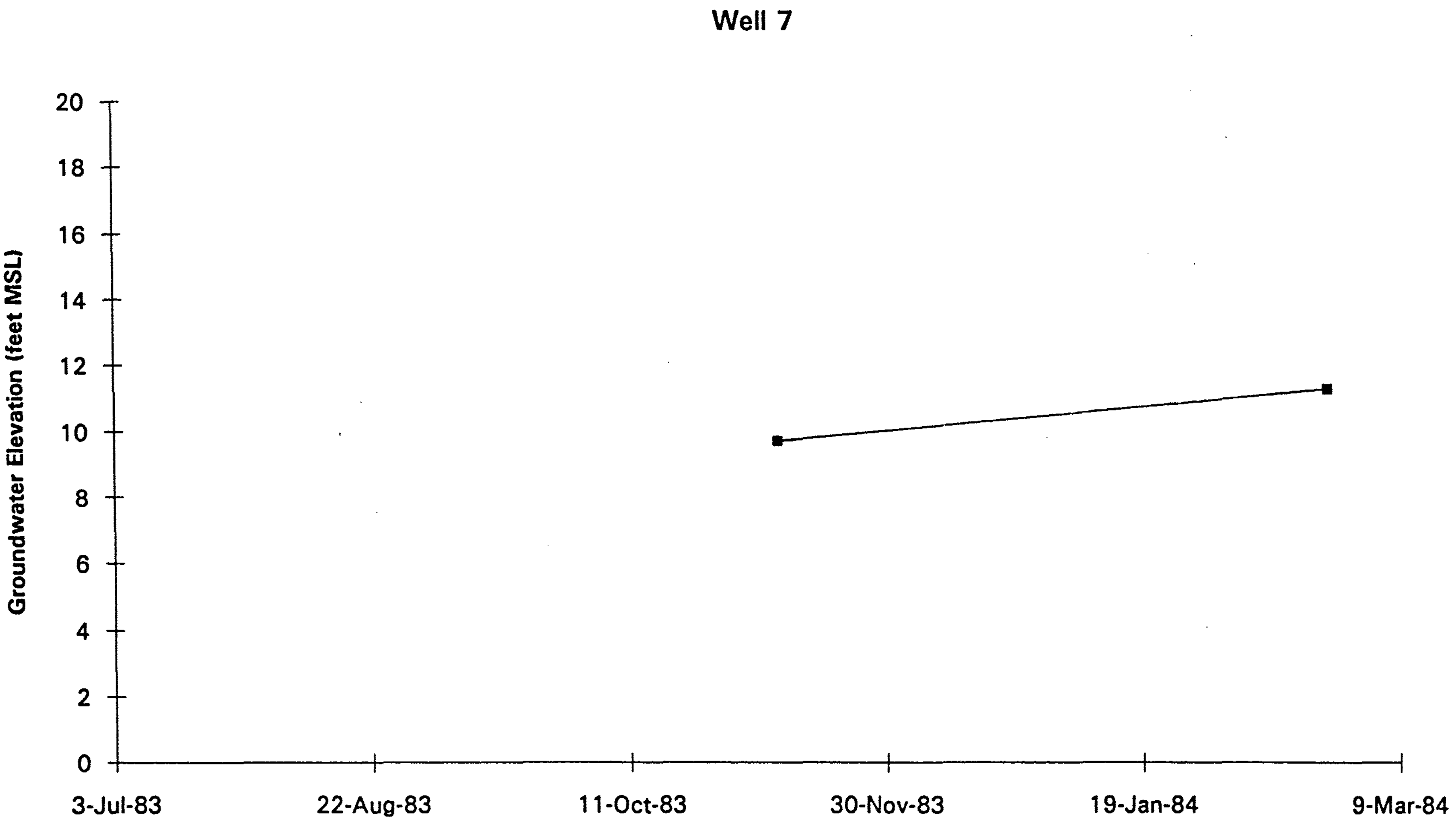

Well 7
Groundwater Elevation (feet MSL)
20
18
16
14
12
10
8
6
4
2
0
3-Jul-83
22-Aug-83
11-Oct-83
30-Nov-83
19-Jan-84
9-Mar-84

Figure 7

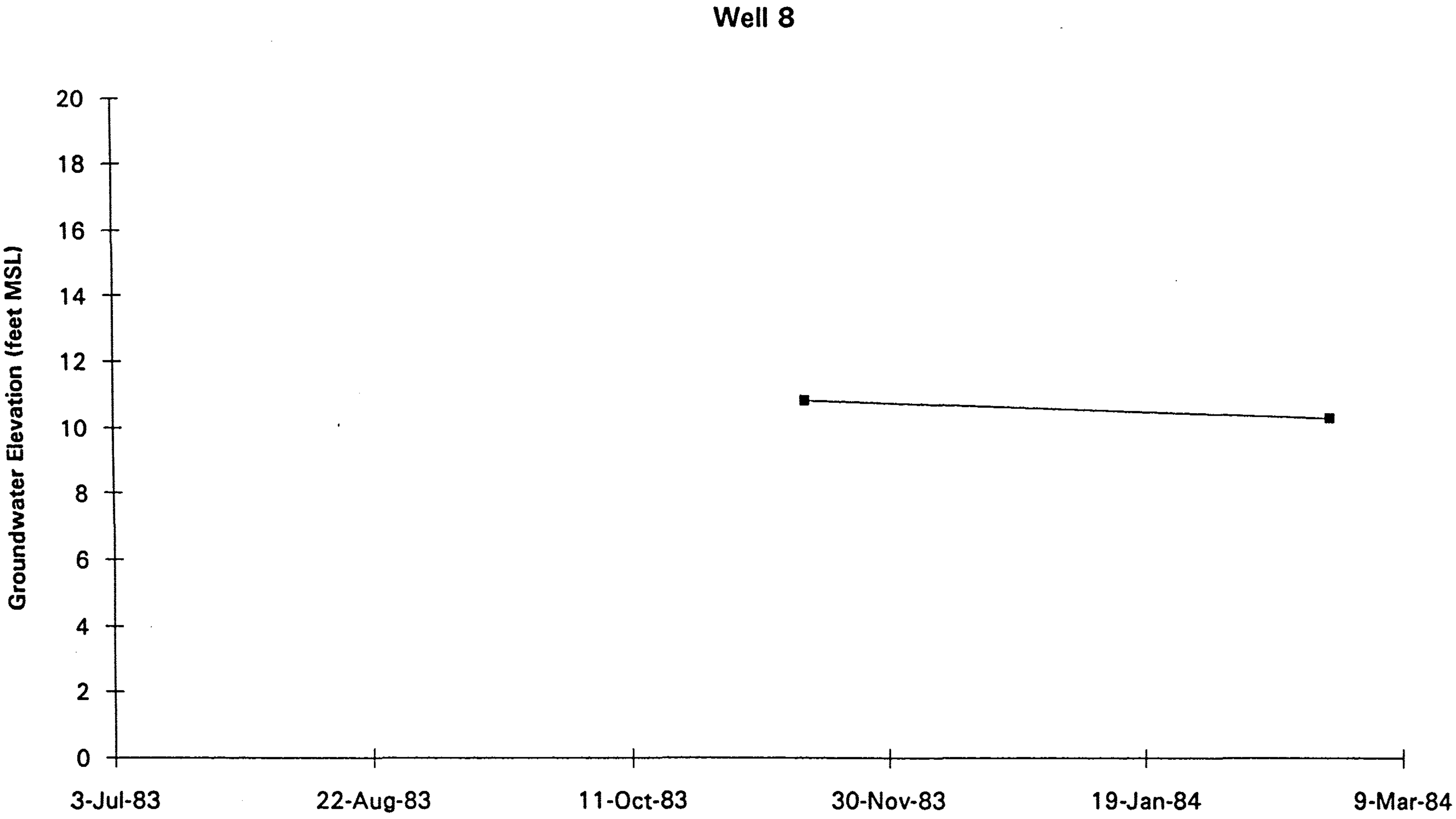

Well 8
Groundwater Elevation (feet MSL)
20
18
16
14
12
10
8
6
4
2
0
3-Jul-83
22-Aug-83
11-Oct-83
30-Nov-83
19-Jan-84
9-Mar-84

Figure 8

Well 9

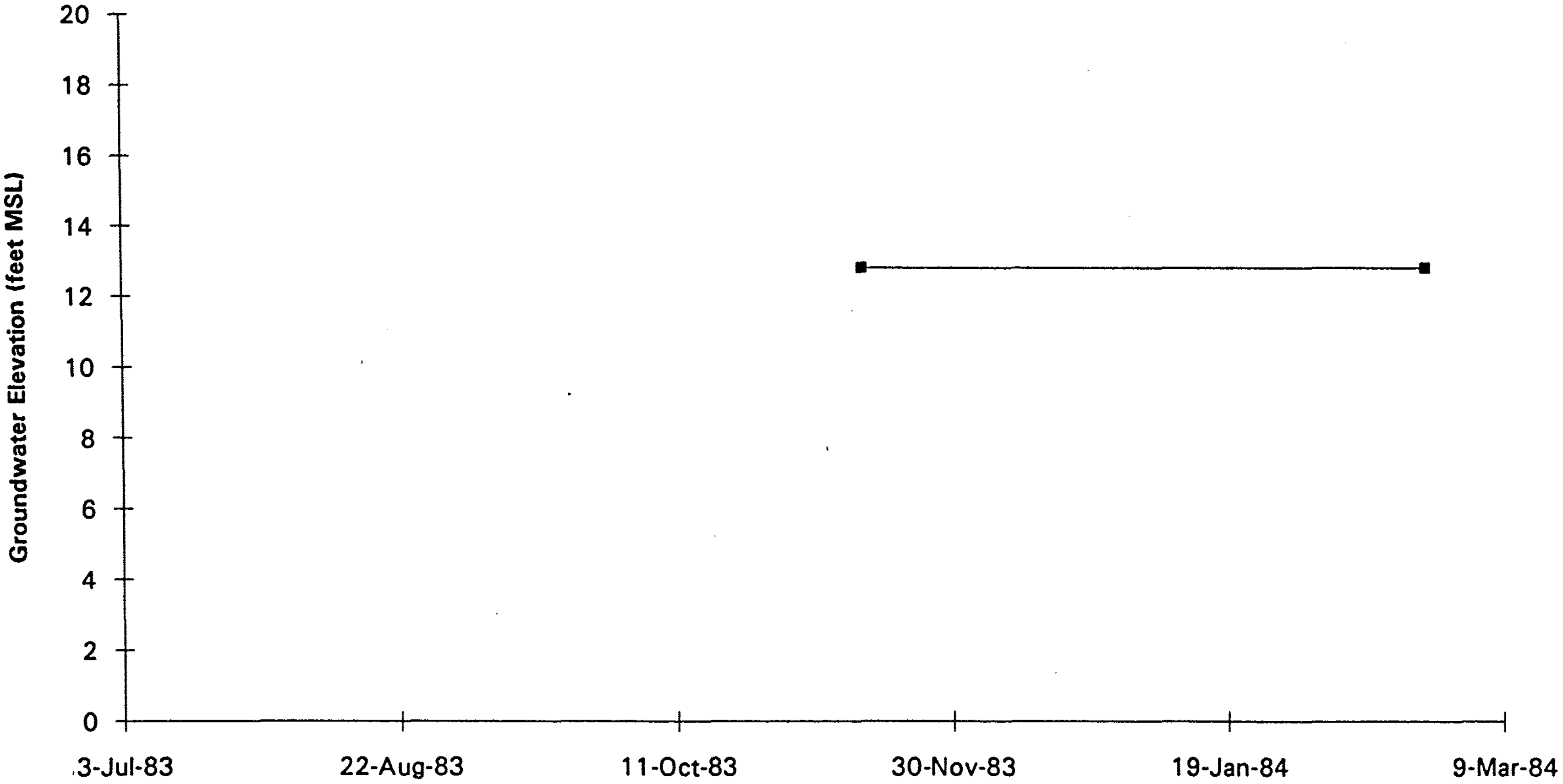


Figure 9

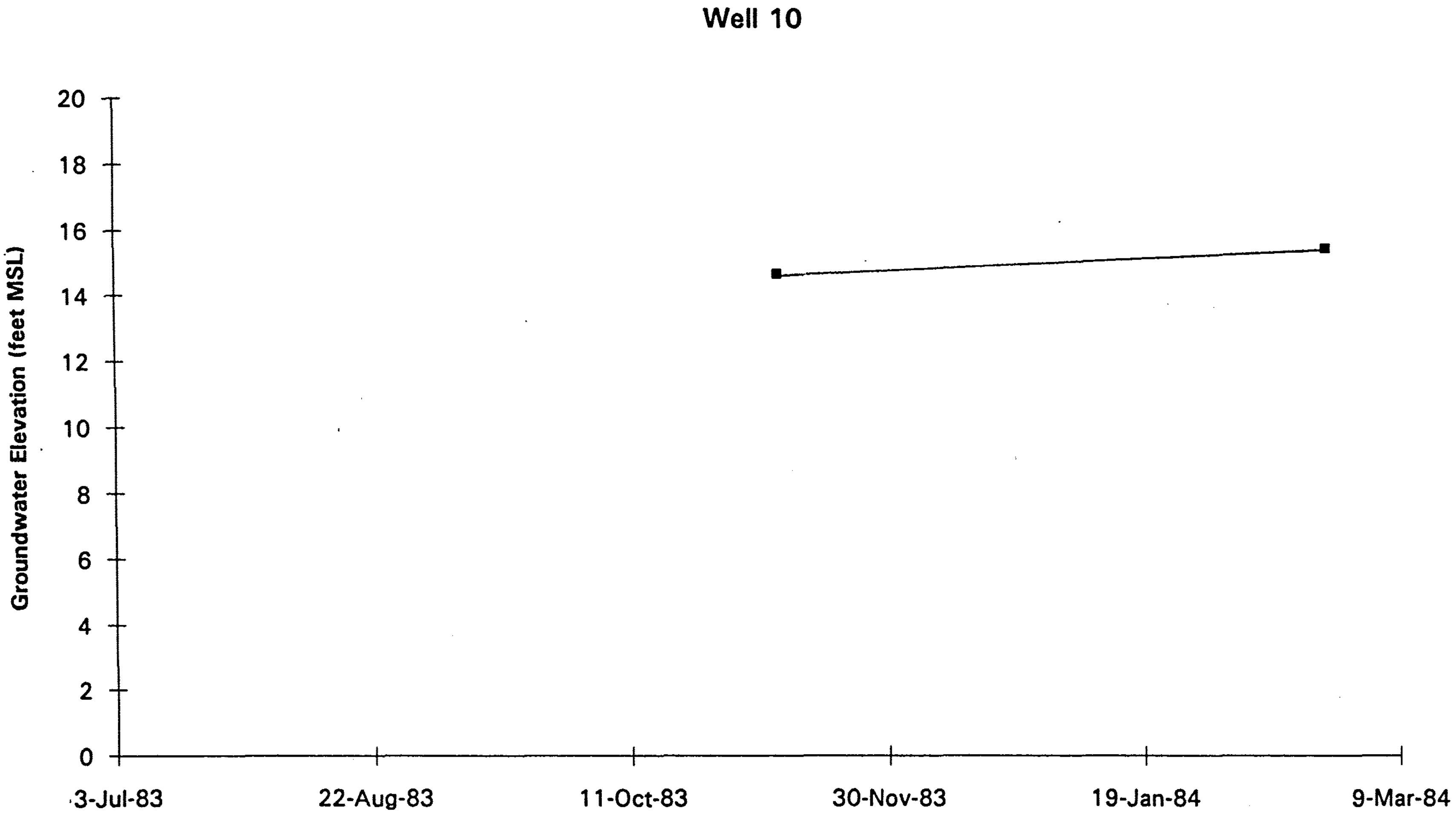

Well 10
Groundwater Elevation (feet MSL)
20
18
16
14
12
10
8
6
4
2
0
3-Jul-83
22-Aug-83
11-Oct-83
30-Nov-83
19-Jan-84
9-Mar-84

Figure 10

Well 11

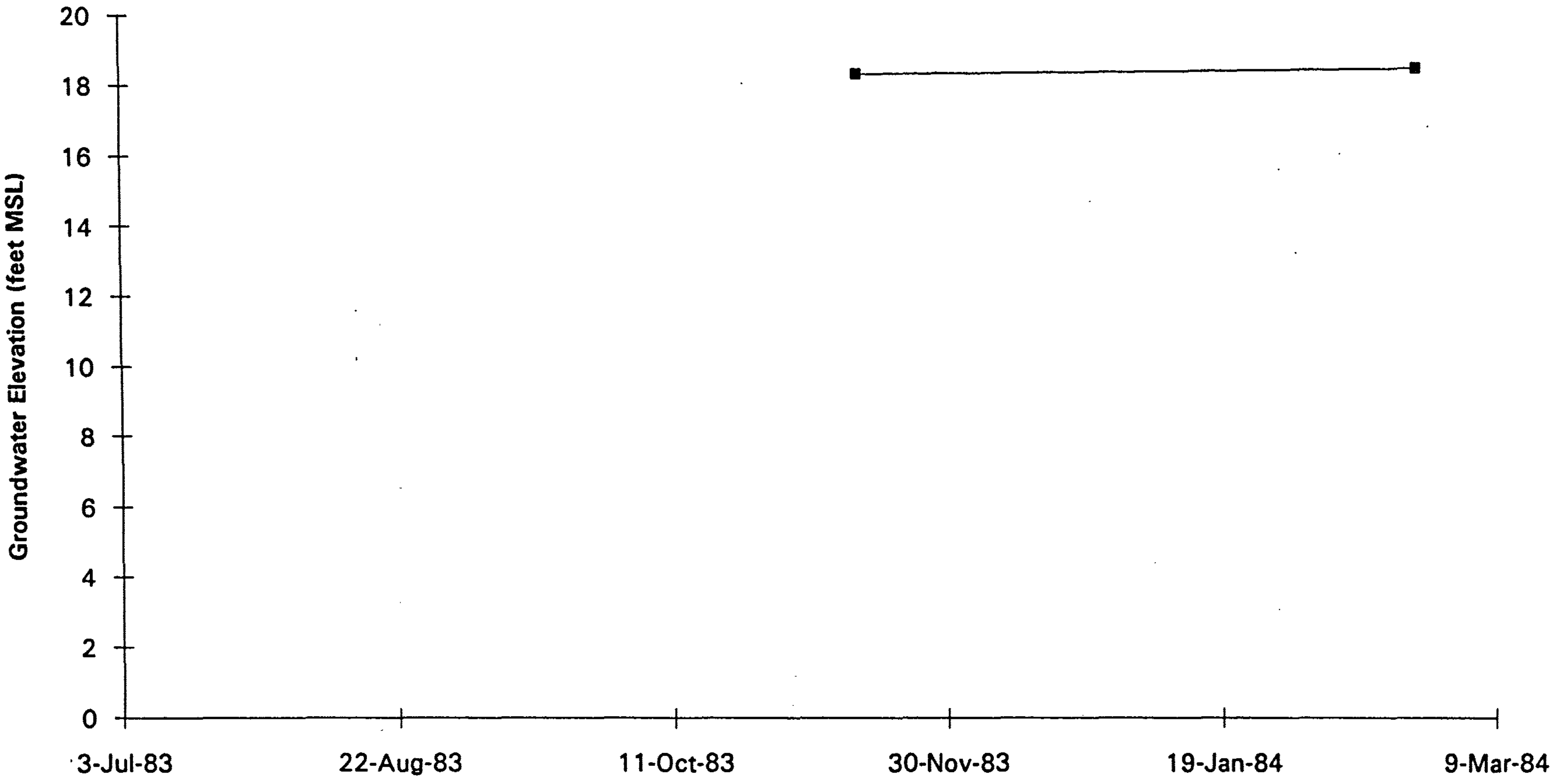


Figure 11

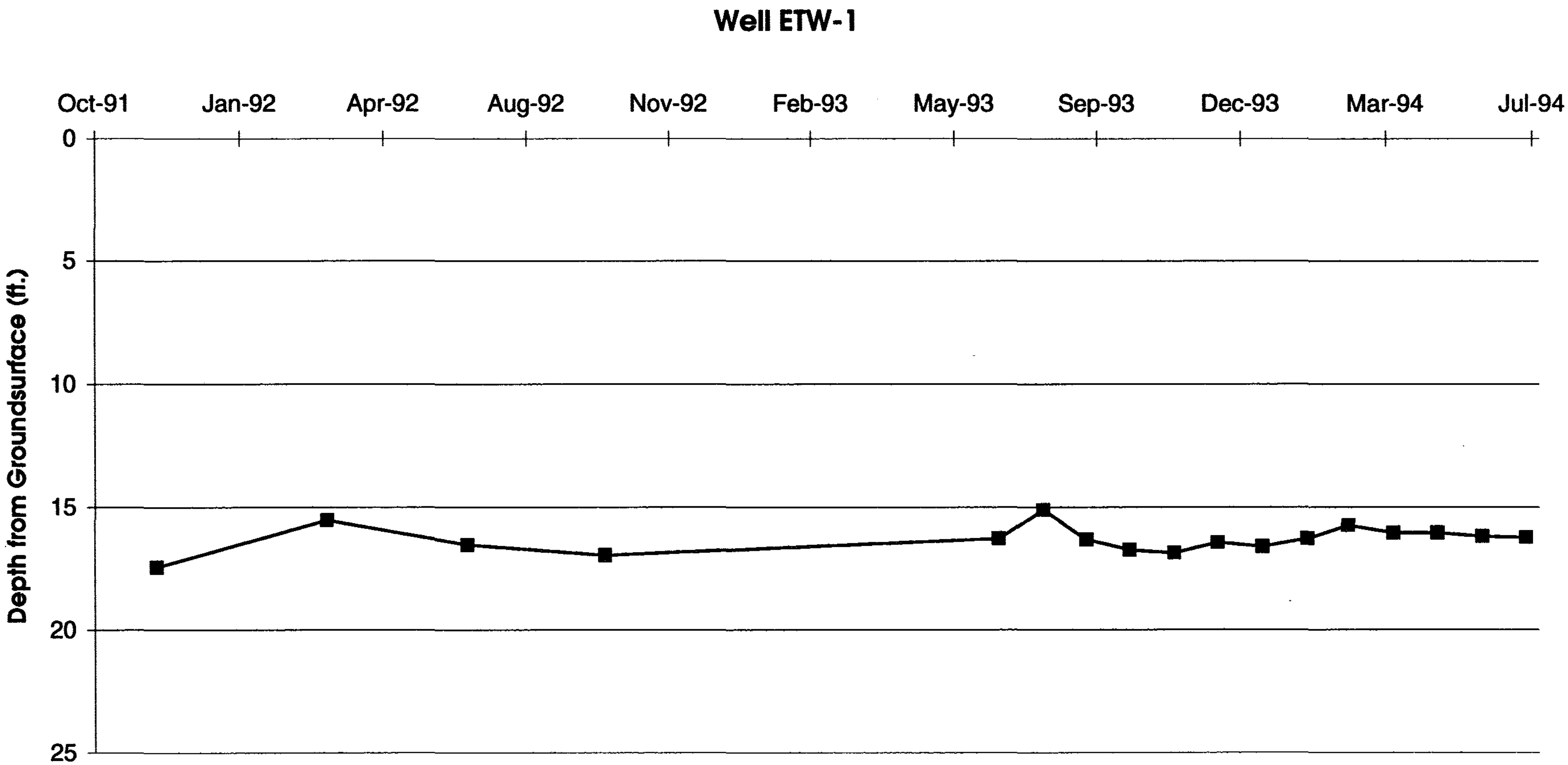

Well ETW-1
Oct-91
Jan-92
Apr-92
Aug-92
Nov-92
Feb-93
May-93
Sep-93
Dec-93
Mar-94
Jul-94
0
5
10
15
20
25
Depth from Groundsurface (ft.)

Figure 12

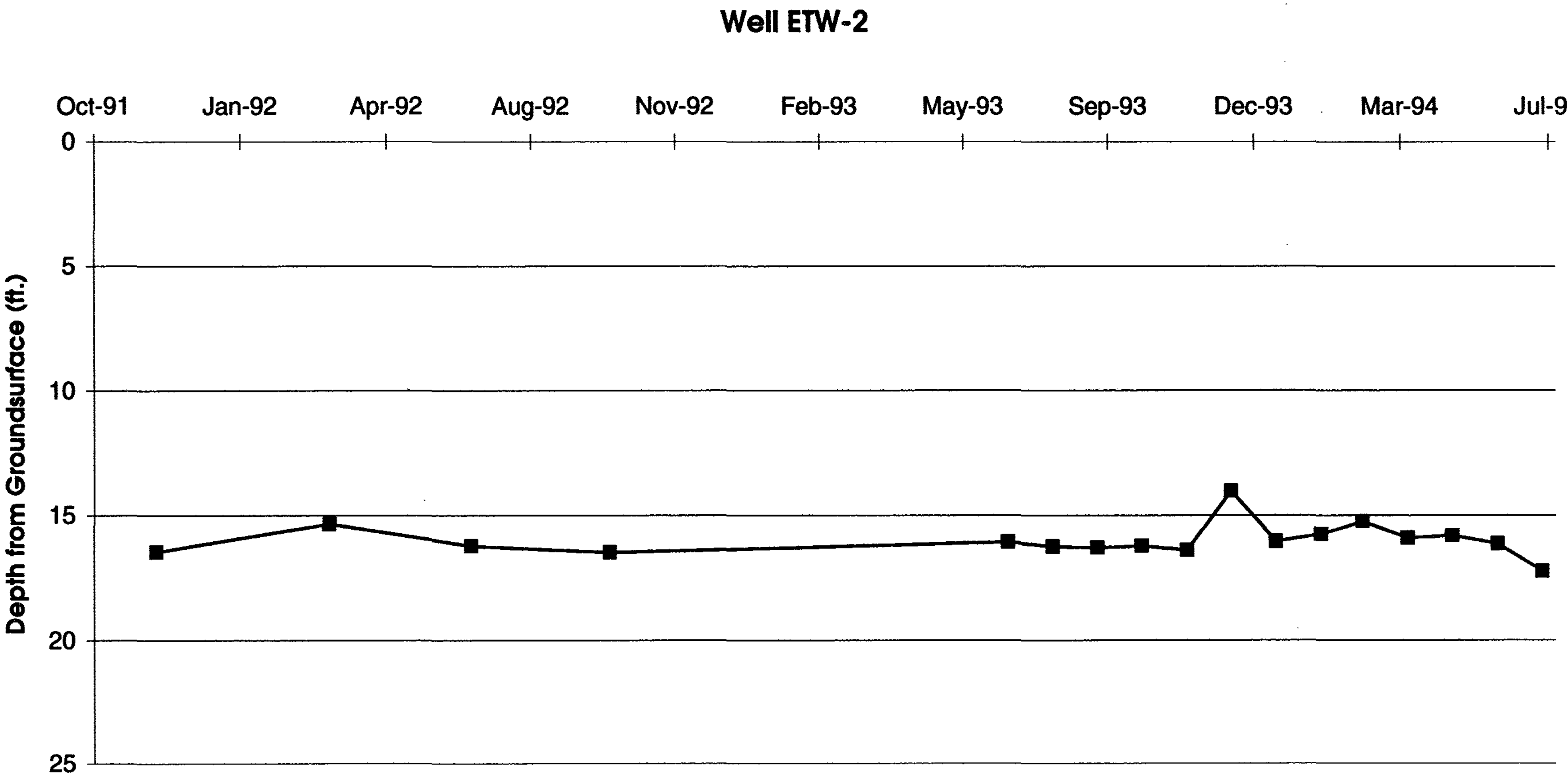

Well ETW-2
Oct-91
Jan-92
Apr-92
Aug-92
Nov-92
Feb-93
May-93
Sep-93
Dec-93
Mar-94
Jul-94
0
5
10
15
20
25
Depth from Groundsurface (ft.)

Figure 13

Well ETW-3

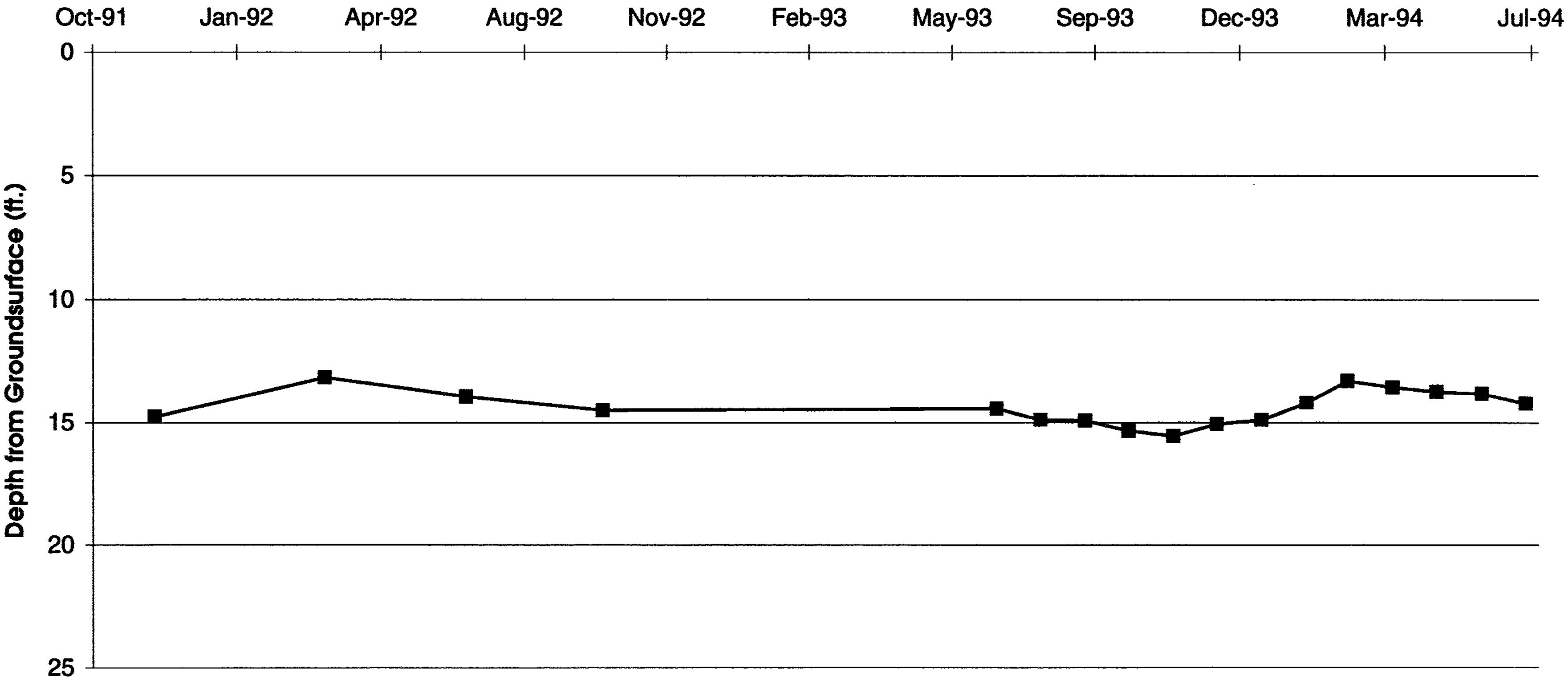


Figure 14

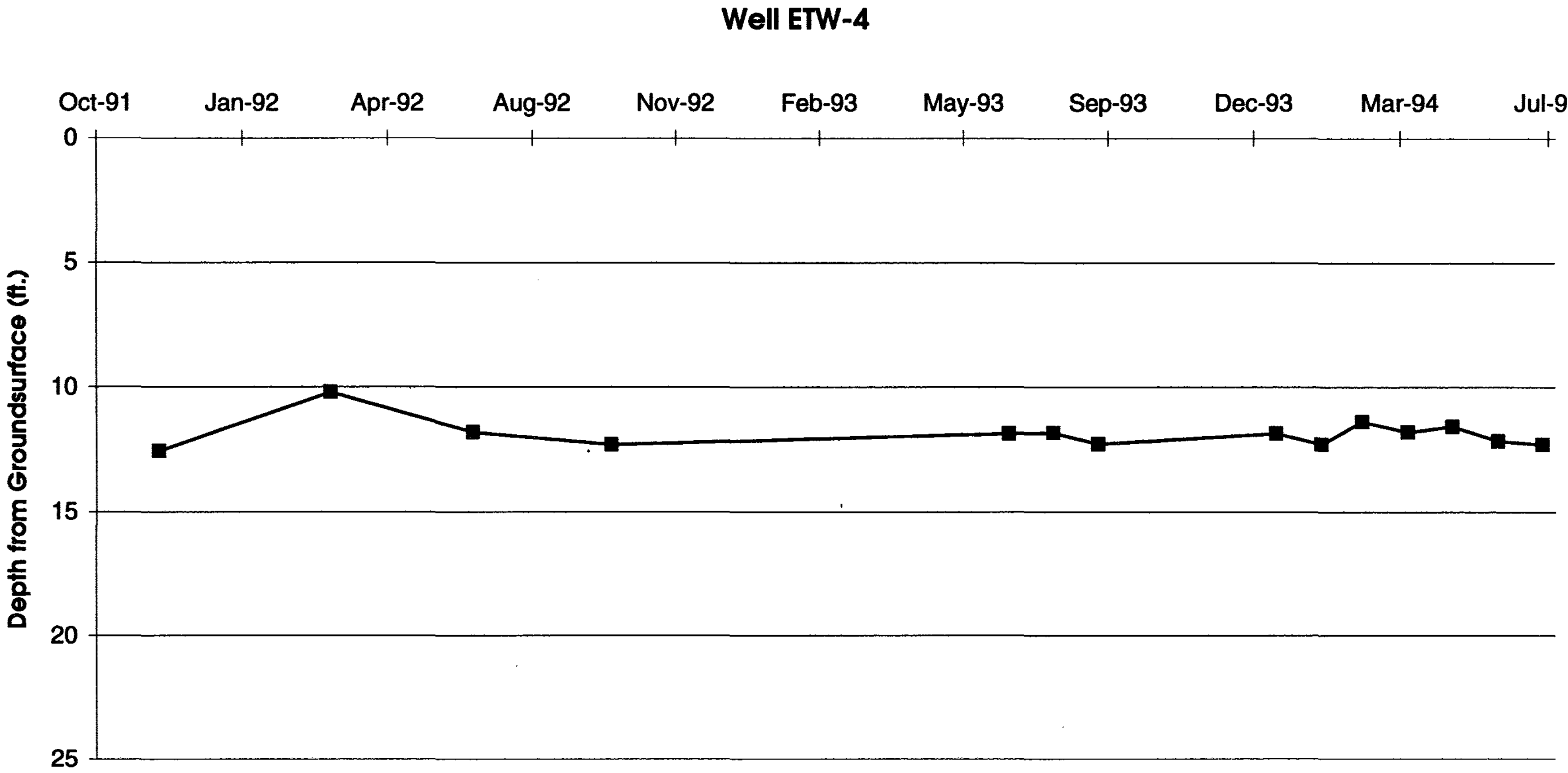

Well ETW-4
Oct-91
Jan-92
Apr-92
Aug-92
Nov-92
Feb-93
May-93
Sep-93
Dec-93
Mar-94
Jul-94
0
5
10
15
20
25
Depth from Groundsurface (ft.)

Figure 15

Well ETW-5

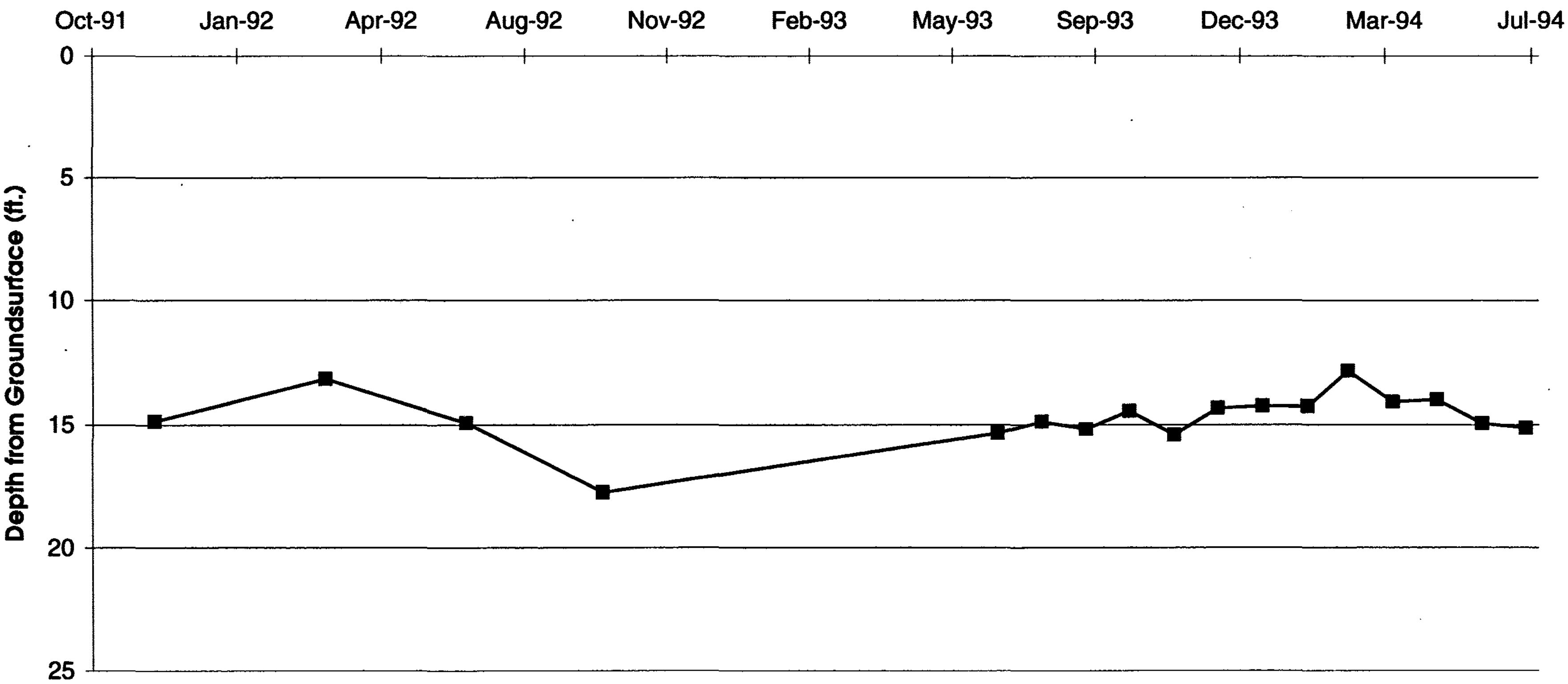


Figure 16

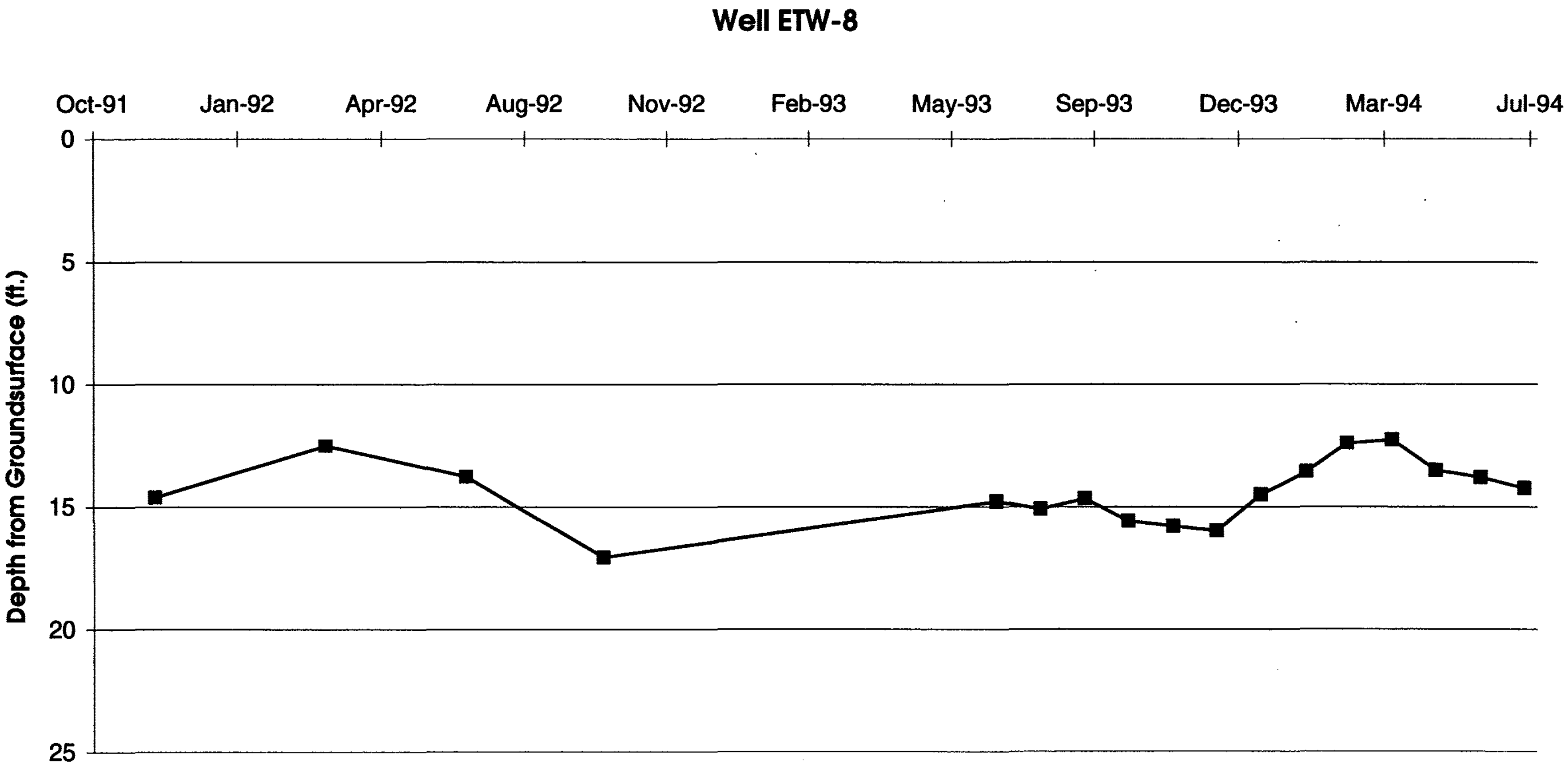

Well ETW-8
Oct-91
Jan-92
Apr-92
Aug-92
Nov-92
Feb-93
May-93
Sep-93
Dec-93
Mar-94
Jul-94
0
5
10
15
20
25
Depth from Groundsurface (ft.)

Figure 17

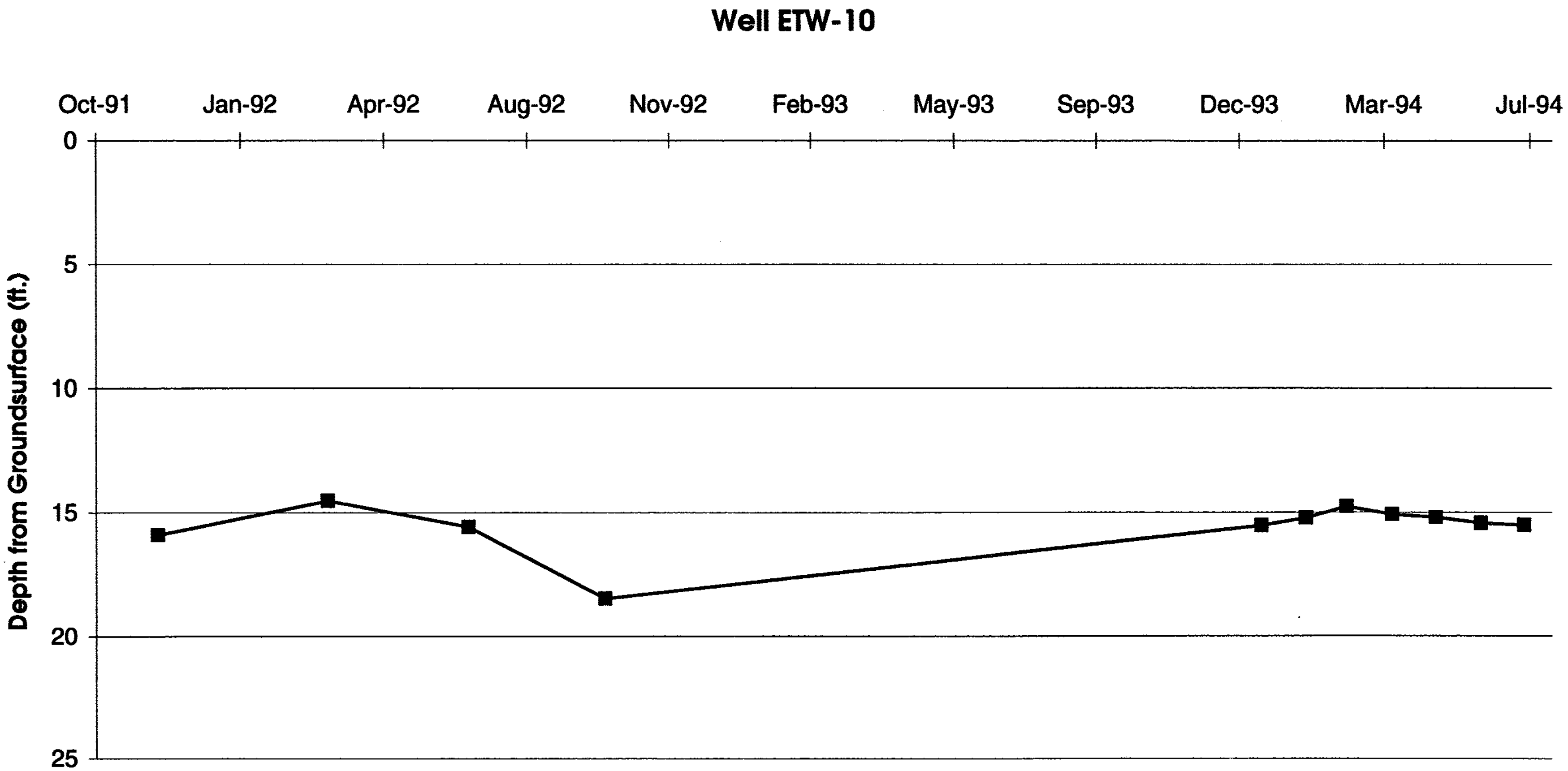

Well ETW-10
Oct-91
Jan-92
Apr-92
Aug-92
Nov-92
Feb-93
May-93
Sep-93
Dec-93
Mar-94
Jul-94
0
5
10
15
20
25
Depth from Groundsurface (ft.)

Figure 18

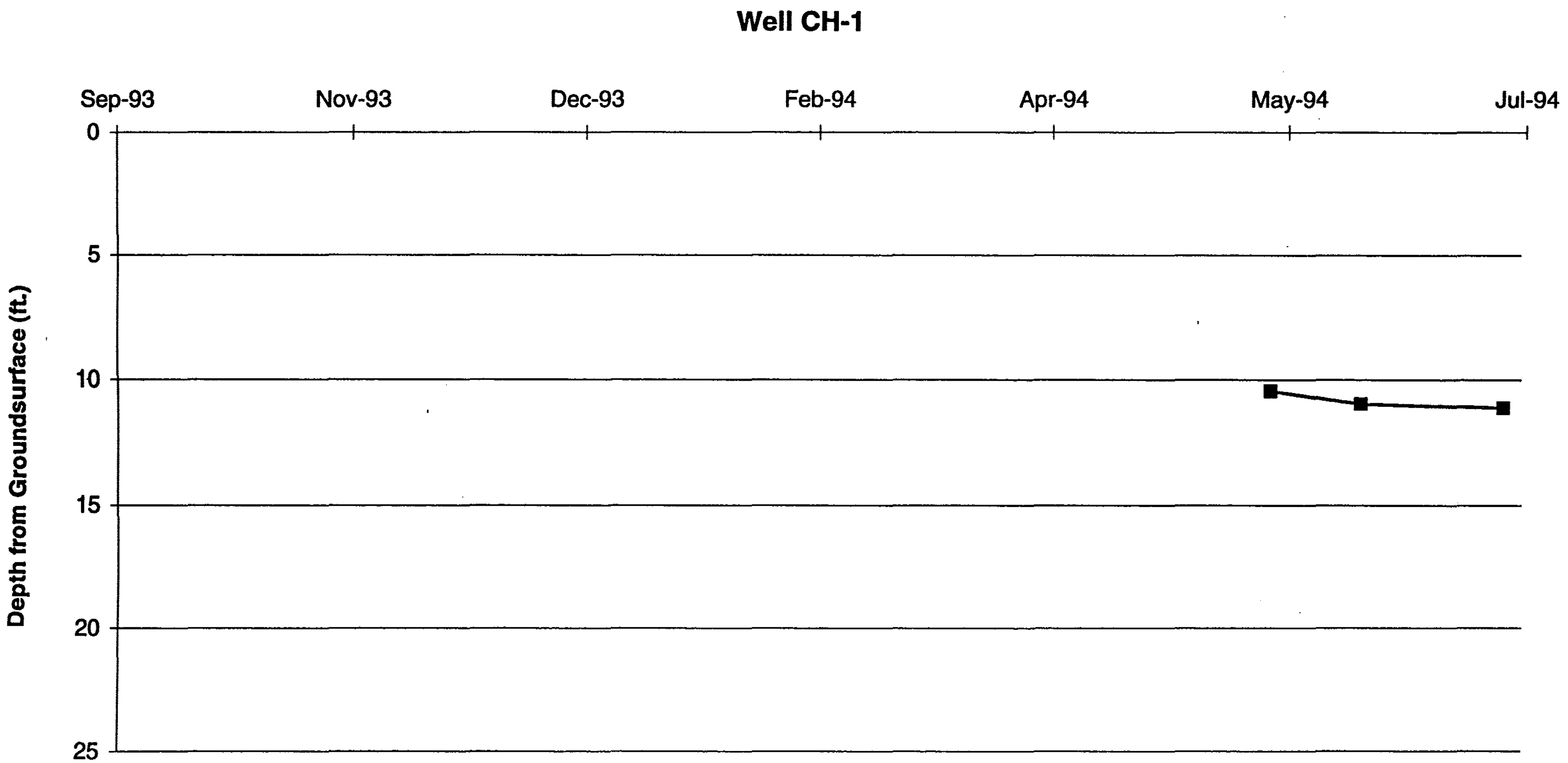

Well CH-1
Sep-93
Nov-93
Dec-93
Feb-94
Apr-94
May-94
Jul-94
0
5
10
15
20
25
Depth from Groundsurface (ft.)

Figure 19

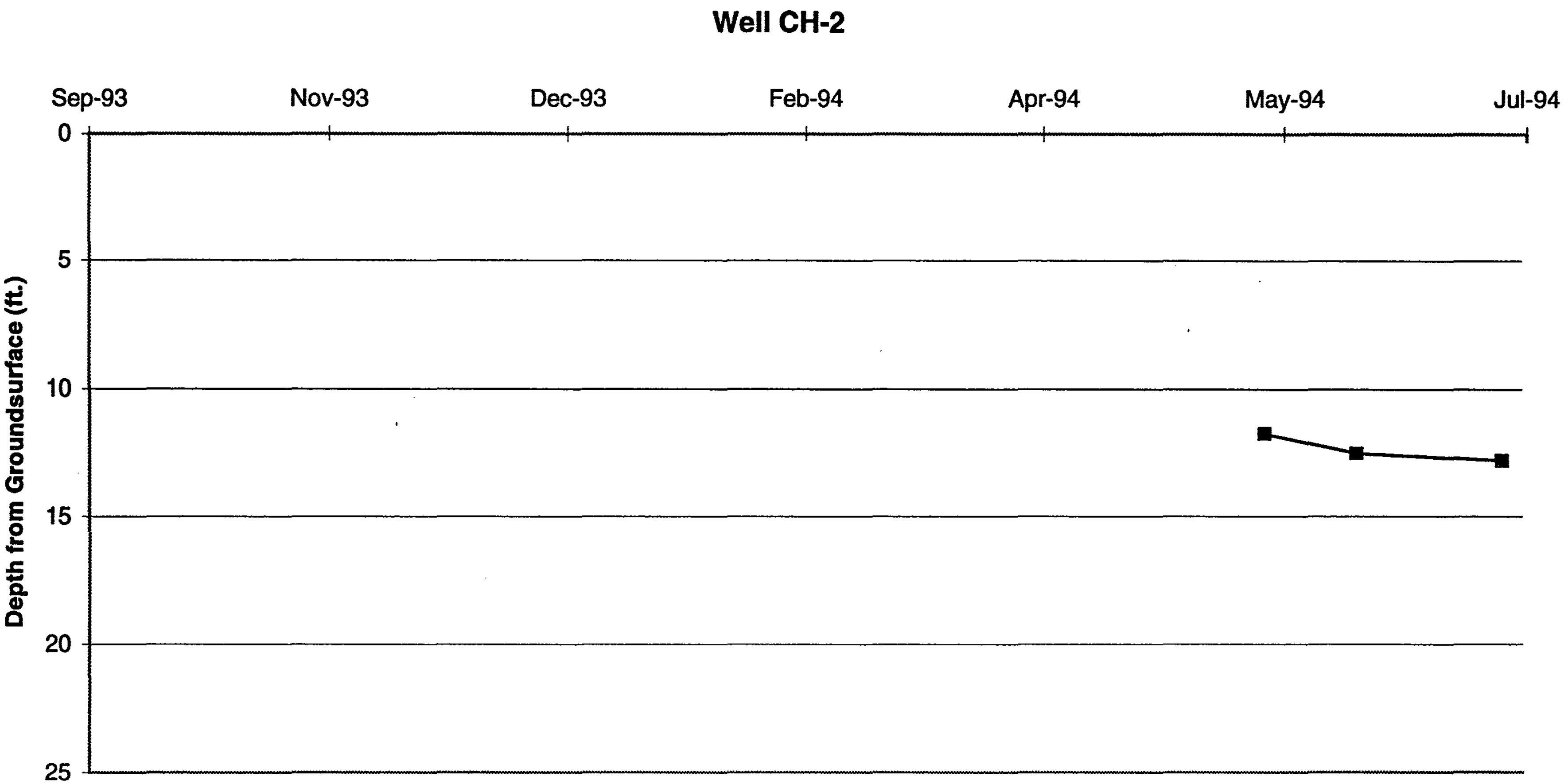

Well CH-2
Sep-93
Nov-93
Dec-93
Feb-94
Apr-94
May-94
Jul-94
0
5
10
15
20
25
Depth from Groundsurface (ft.)

Figure 20

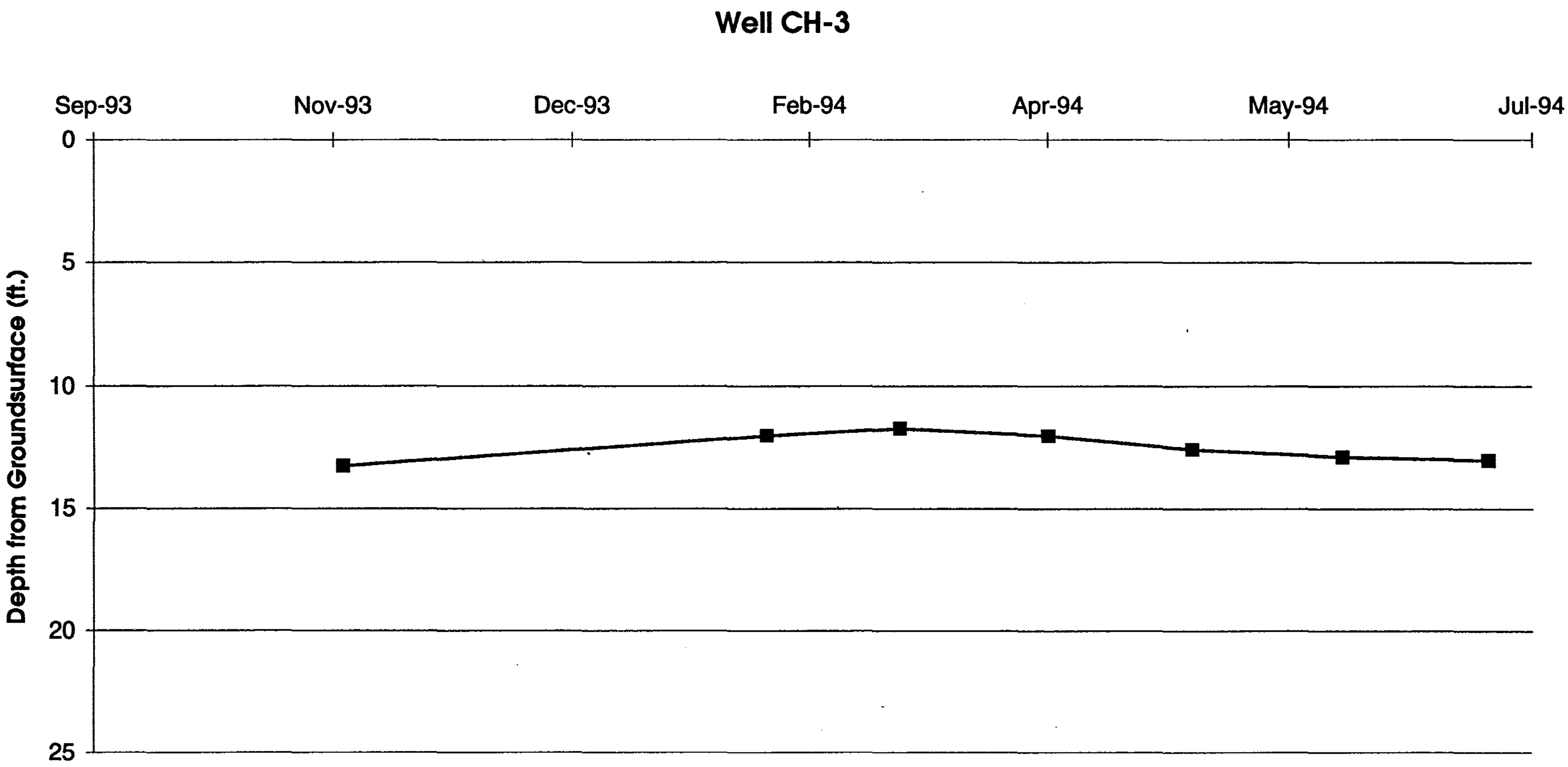

Well CH-3
Sep-93
Nov-93
Dec-93
Feb-94
Apr-94
May-94
Jul-94
0
5
10
15
20
25
Depth from Groundsurface (ft.)

Figure 21

Well CH-5

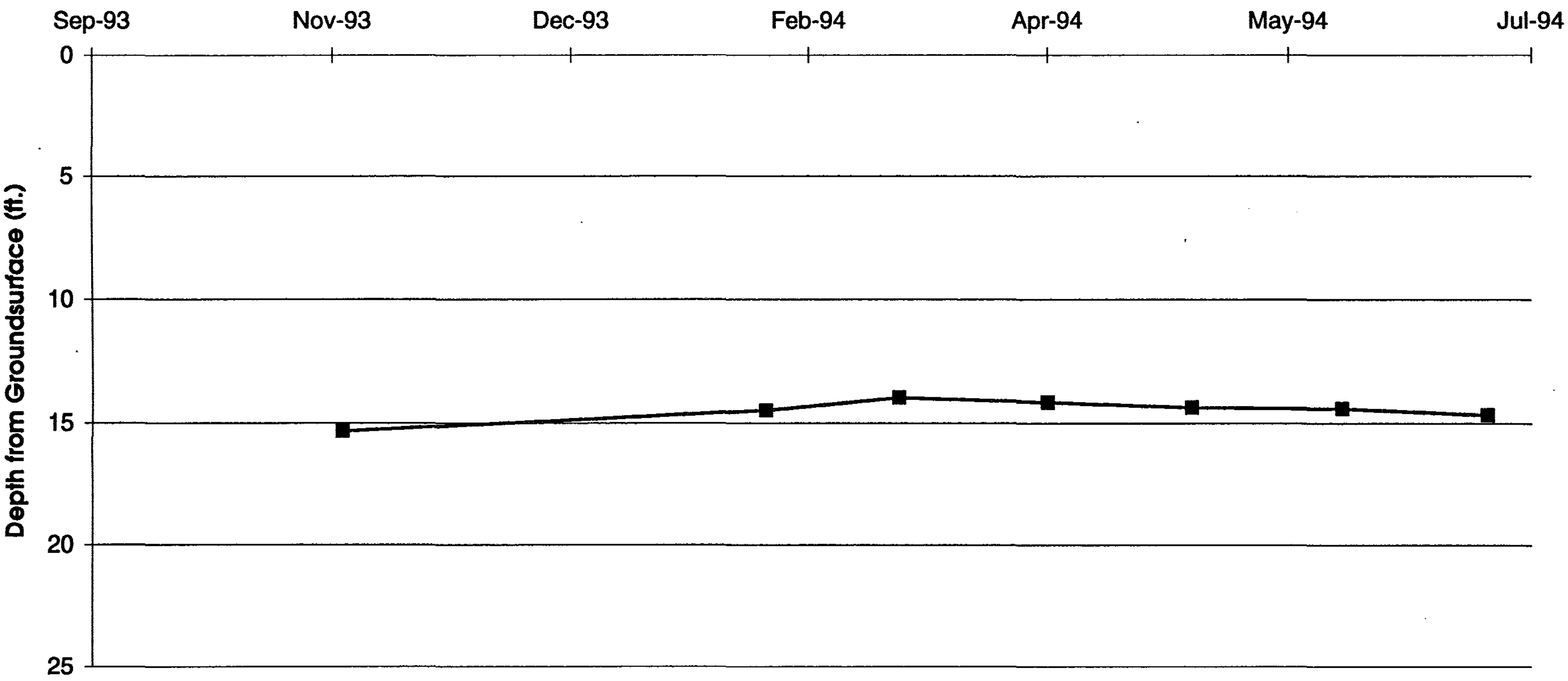


Figure 22

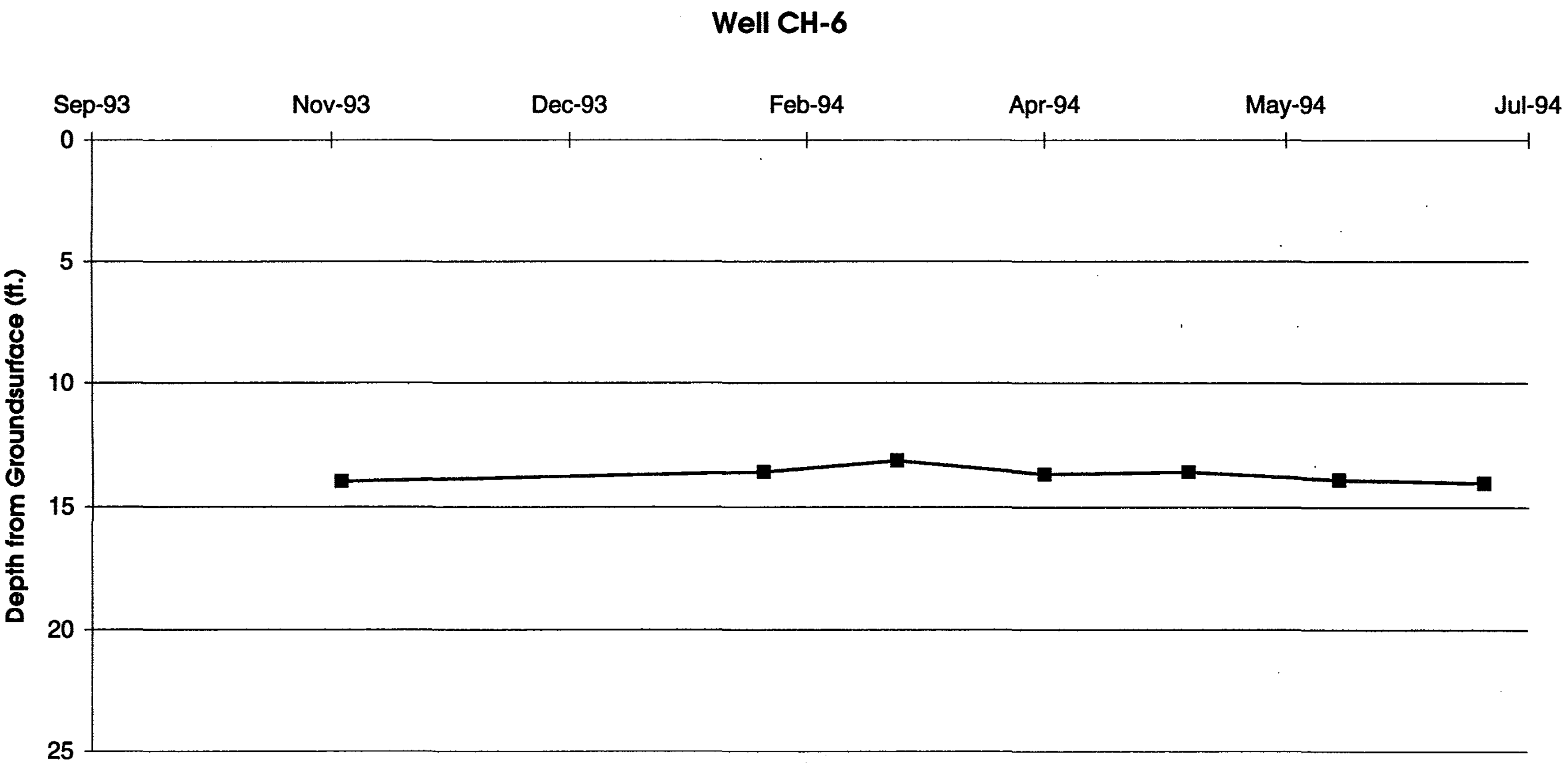
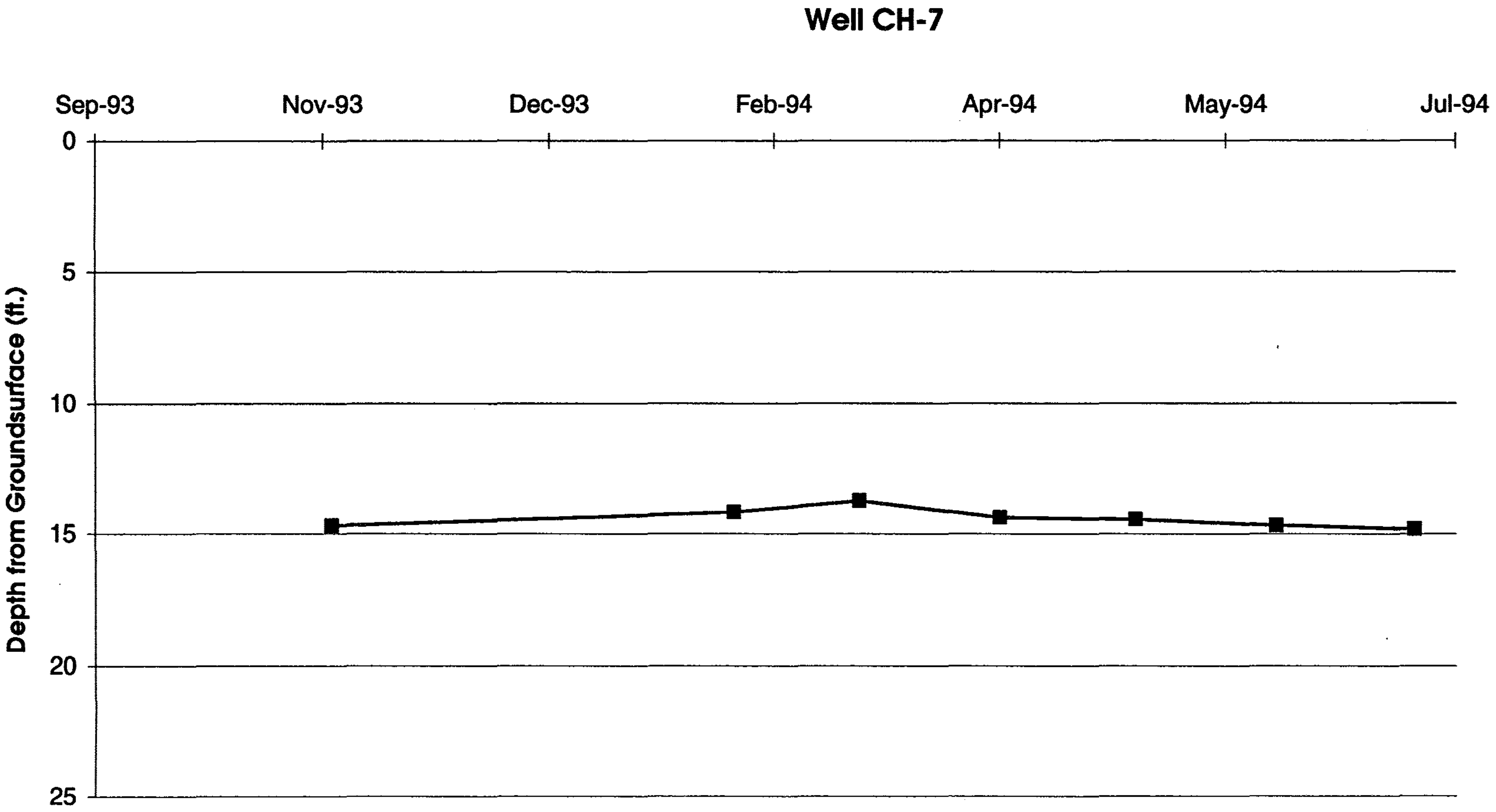

Well CH-6
Sep-93
Nov-93
Dec-93
Feb-94
Apr-94
May-94
Jul-94
0
5
10
15
20
25
Depth from Groundsurface (ft.)

Figure 23



Well CH-7
Sep-93
Nov-93
Dec-93
Feb-94
Apr-94
May-94
Jul-94
0
5
10
15
20
25
Depth from Groundsurface (ft.)

Figure 24

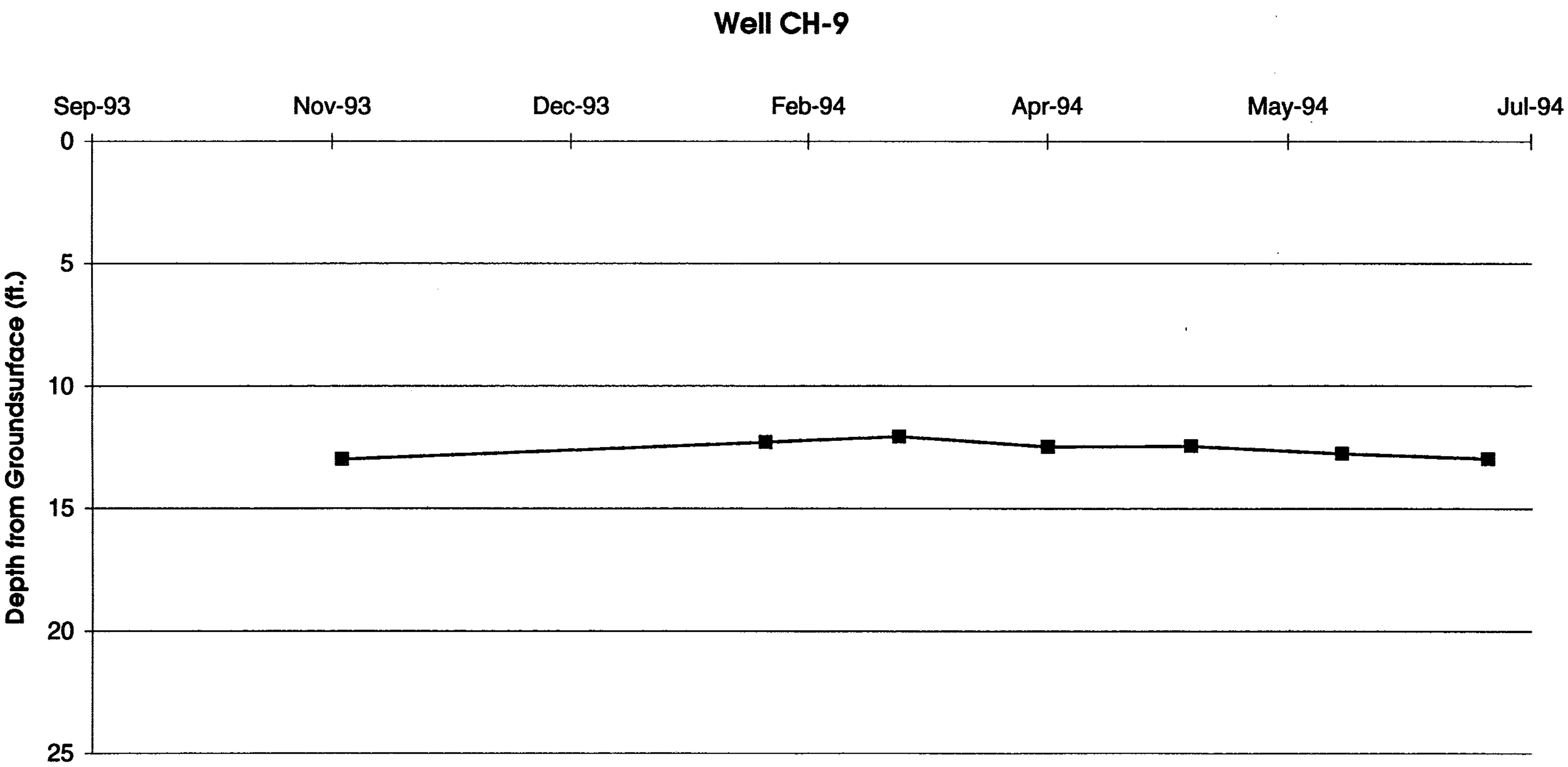

Well CH-9
Sep-93
Nov-93
Dec-93
Feb-94
Apr-94
May-94
Jul-94
0
5
10
15
20
25
Depth from Groundsurface (ft.)

Figure 25

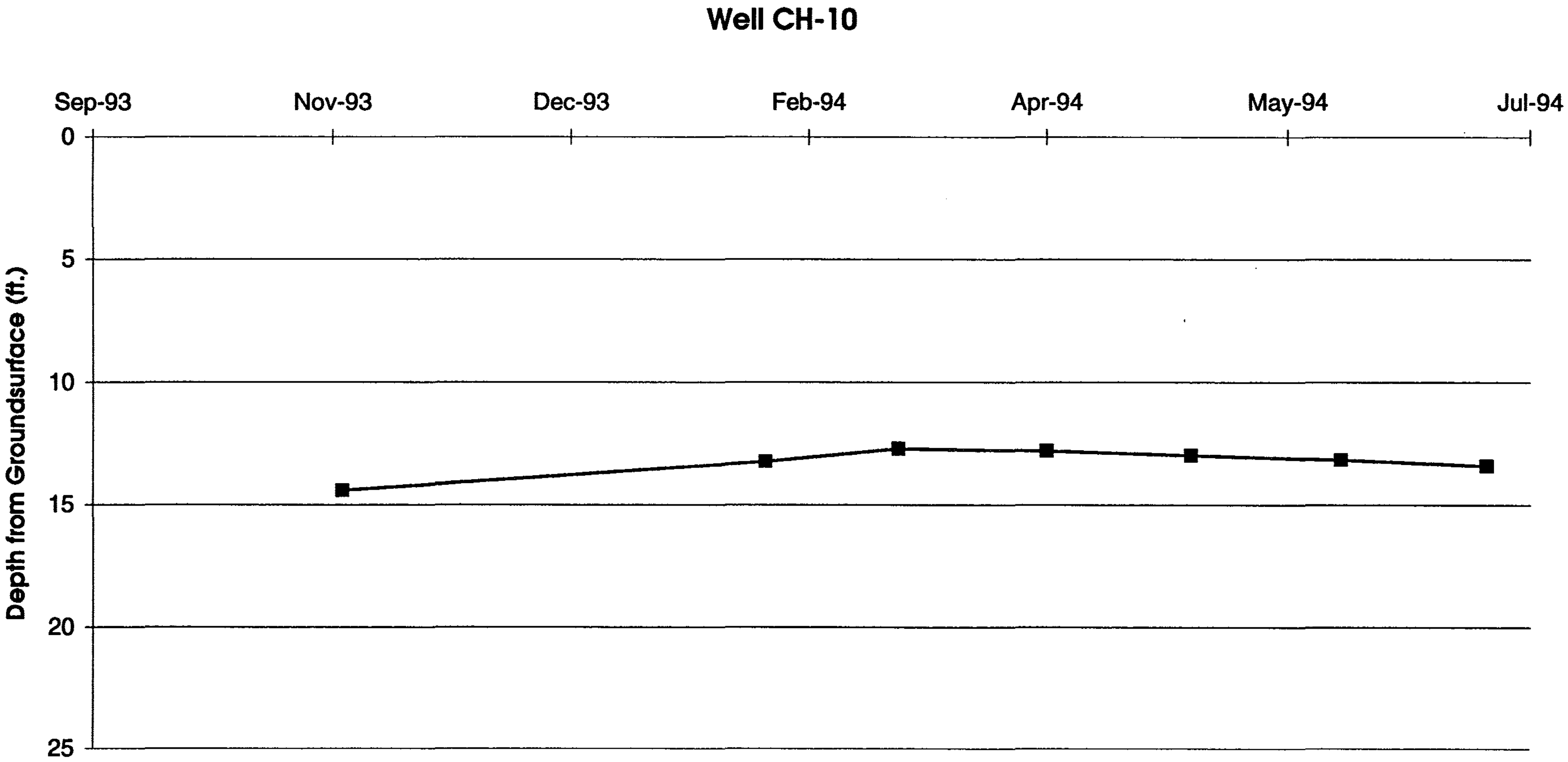

Well CH-10
Sep-93
Nov-93
Dec-93
Feb-94
Apr-94
May-94
Jul-94
0
5
10
15
20
25
Depth from Groundsurface (ft.)

Figure 26

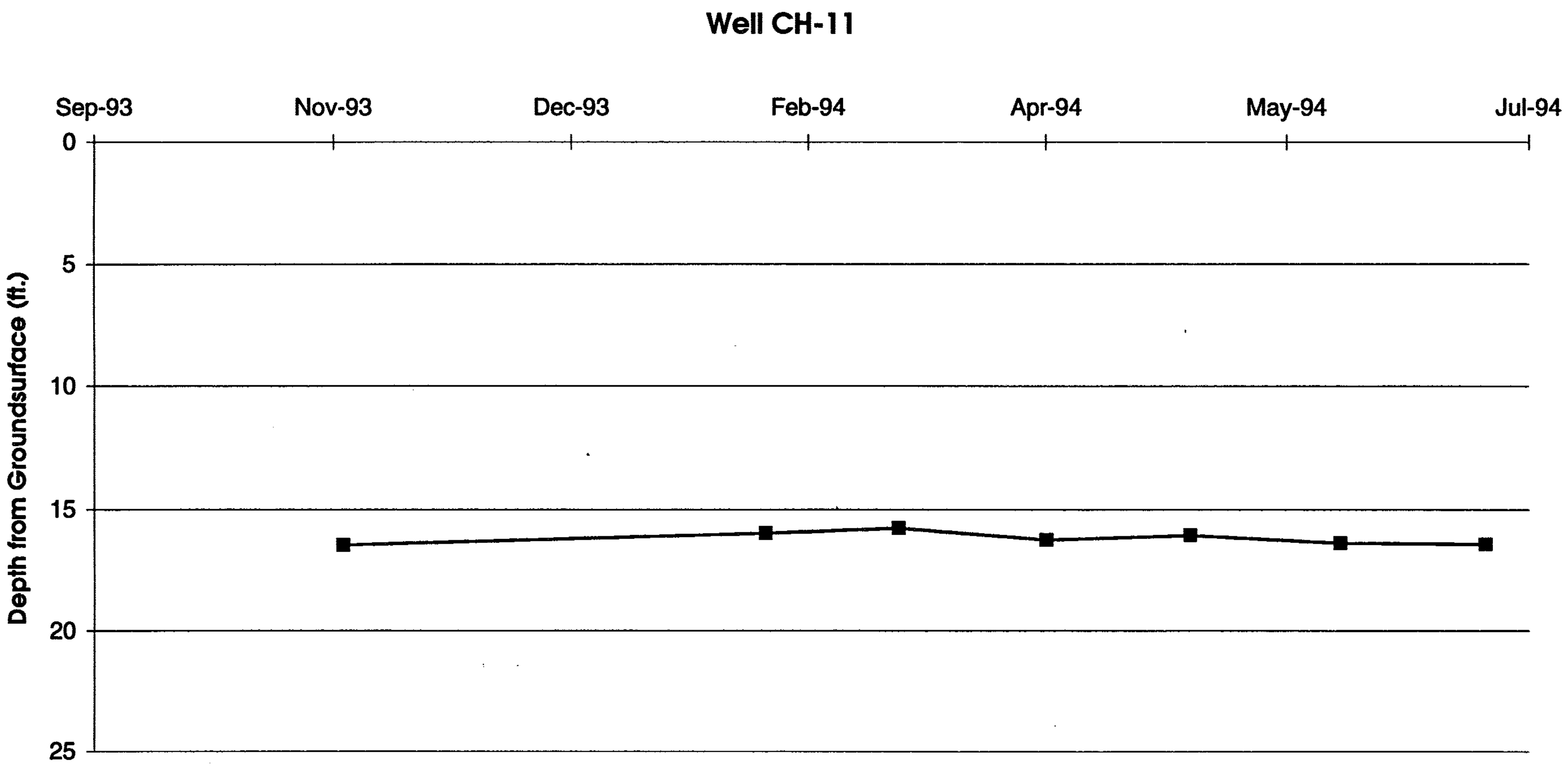

Well CH-11
Sep-93
Nov-93
Dec-93
Feb-94
Apr-94
May-94
Jul-94
0
5
10
15
20
25
Depth from Groundsurface (ft.)

Figure 27

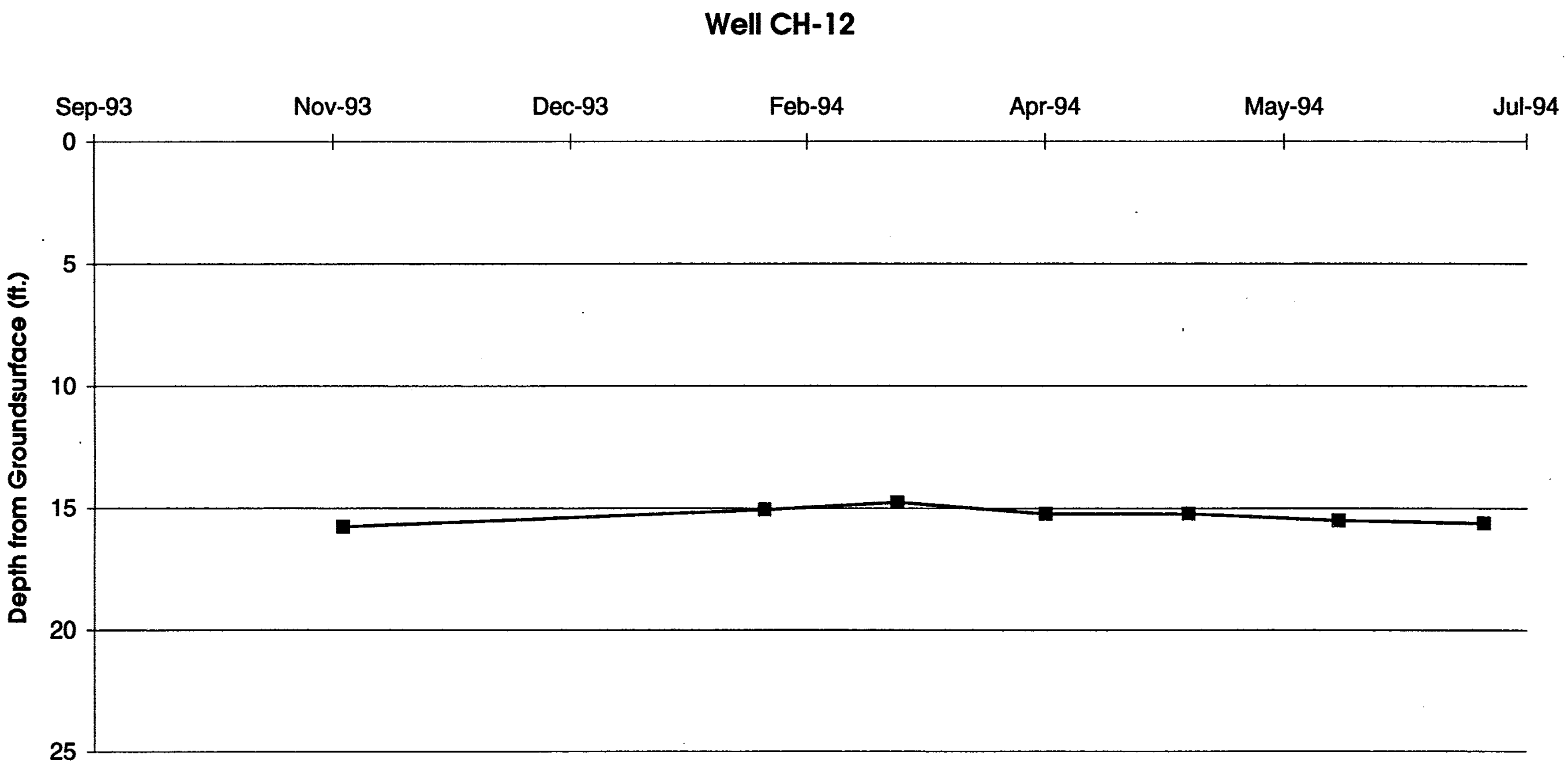

Well CH-12
Sep-93
Nov-93
Dec-93
Feb-94
Apr-94
May-94
Jul-94
0
5
10
15
20
25
Depth from Groundsurface (ft.)

Figure 28

Well CH-13

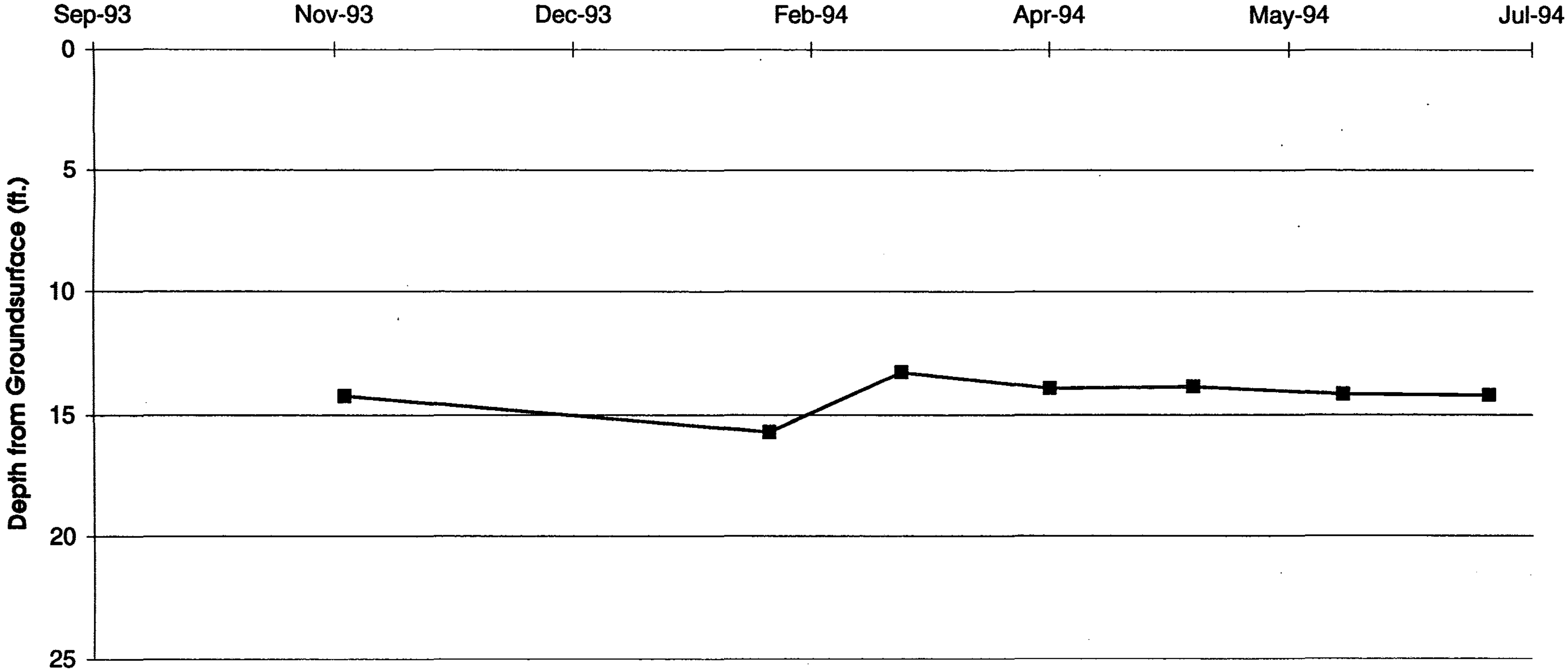
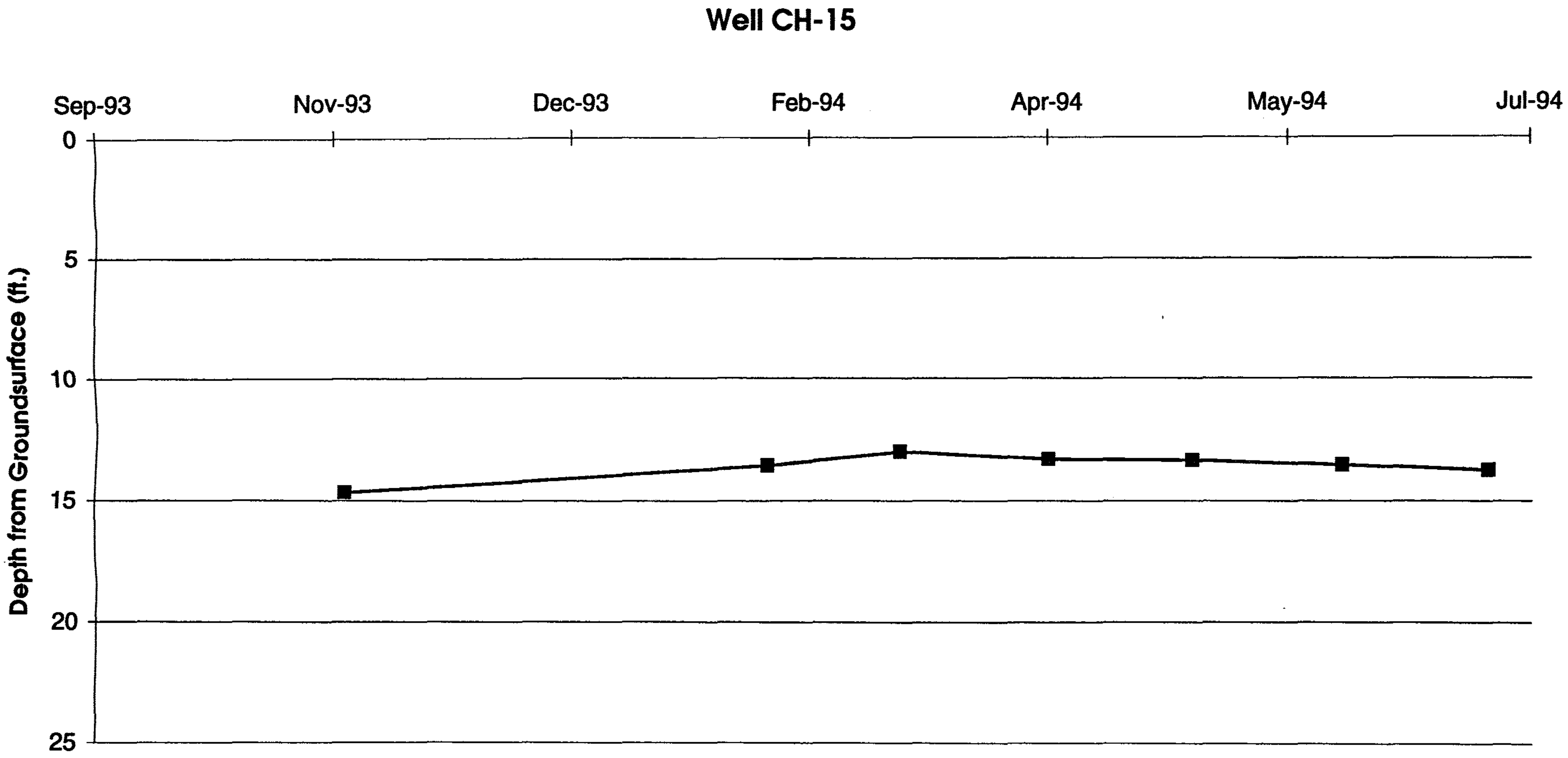
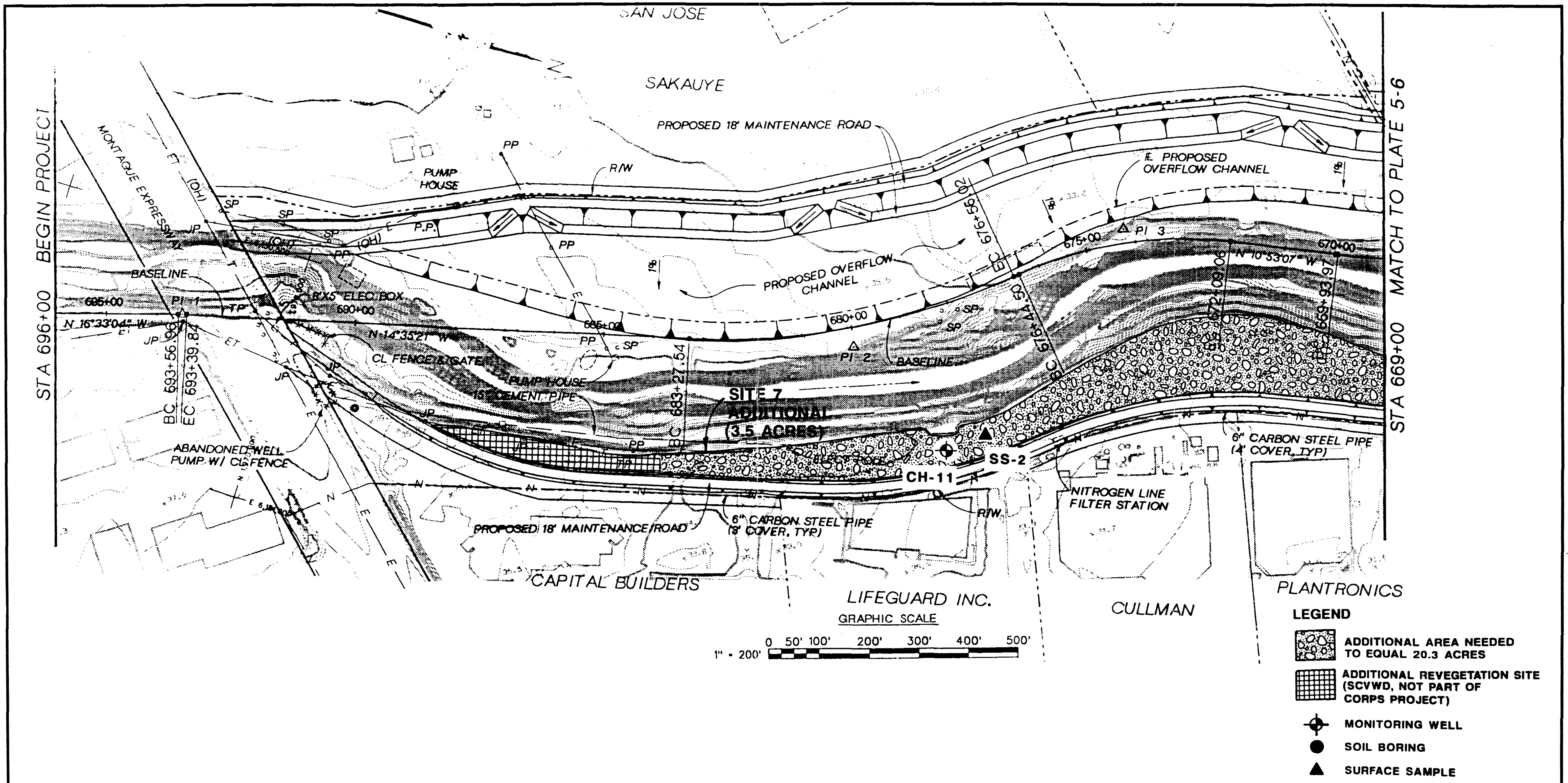


Figure 29



Well CH-15
Sep-93
Nov-93
Dec-93
Feb-94
Apr-94
May-94
Jul-94
0
5
10
15
20
25
Depth from Groundsurface (ft.)

Figure 30



ENVIRONMENTAL ASSESSMENT
COYOTE CREEK ELEMENT OF
THE COYOTE AND BERRYESSA CREEKS, CALIFORNIA, PROJECT

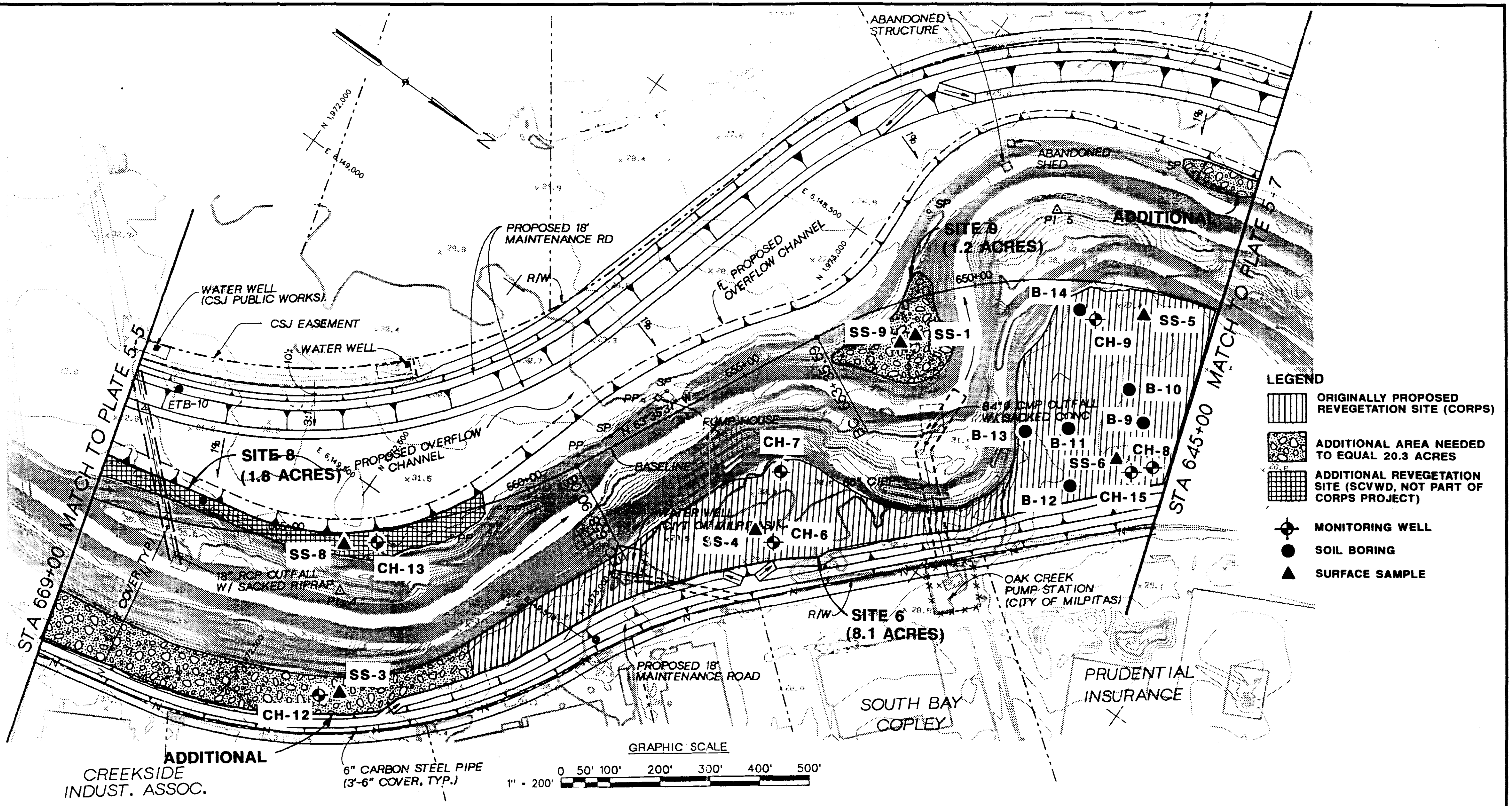
REACH 3
SOIL AND GROUNDWATER
SAMPLE LOCATIONS

CH2M HILL

DEC 1993

SFO31213.A1

PLATE 1


ABANDONED STRUCTURE
N
N 1,972,000
E 6,149,000
E 6,148,500
N 1,973,000
ABANDONED SHED
PROPOSED 18' MAINTENANCE RD
R/W
℄ PROPOSED OVERFLOW CHANNEL
SITE 9 (1.2 ACRES)
PI 5
ADDITIONAL
650+00
655+00
660+00
B-14
SS-9
SS-1
SS-5
CH-9
B-10
B-9
B-13
B-11
CH-8
SS-6
B-12
CH-15
84" CMP OUTFALL W/ SACKED CONC
BC 653+35.69
N 63°35'37" W
PUMP HOUSE
BASELINE
CH-7
WATER WELL (CITY OF MILPITAS)
SS-4
CH-6
WATER WELL (CSJ PUBLIC WORKS)
CSJ EASEMENT
WATER WELL
ETB-10
SITE 8 (1.8 ACRES)
PROPOSED OVERFLOW CHANNEL
SS-8
CH-13
18" RCP OUTFALL W/ SACKED RIPRAP
PI 4
COVER, TYP.
SS-3
CH-12
ADDITIONAL
STA 669+00 MATCH TO PLATE 5-5
STA 645+00 MATCH TO PLATE 5-7
OAK CREEK PUMP STATION (CITY OF MILPITAS)
SITE 6 (8.1 ACRES)
PROPOSED 18' MAINTENANCE ROAD
PRUDENTIAL INSURANCE
SOUTH BAY COPLEY
CREEKSIDE INDUST. ASSOC.
6" CARBON STEEL PIPE (3'-6" COVER, TYP.)
GRAPHIC SCALE
0 50' 100' 200' 300' 400' 500'
1" = 200'
LEGEND
ORIGINALLY PROPOSED REVEGETATION SITE (CORPS)
ADDITIONAL AREA NEEDED TO EQUAL 20.3 ACRES
ADDITIONAL REVEGETATION SITE (SCVWD, NOT PART OF CORPS PROJECT)
MONITORING WELL
SOIL BORING
SURFACE SAMPLE

ENVIRONMENTAL ASSESSMENT
COYOTE CREEK ELEMENT OF
THE COYOTE AND BERRYESSA CREEKS, CALIFORNIA, PROJECT

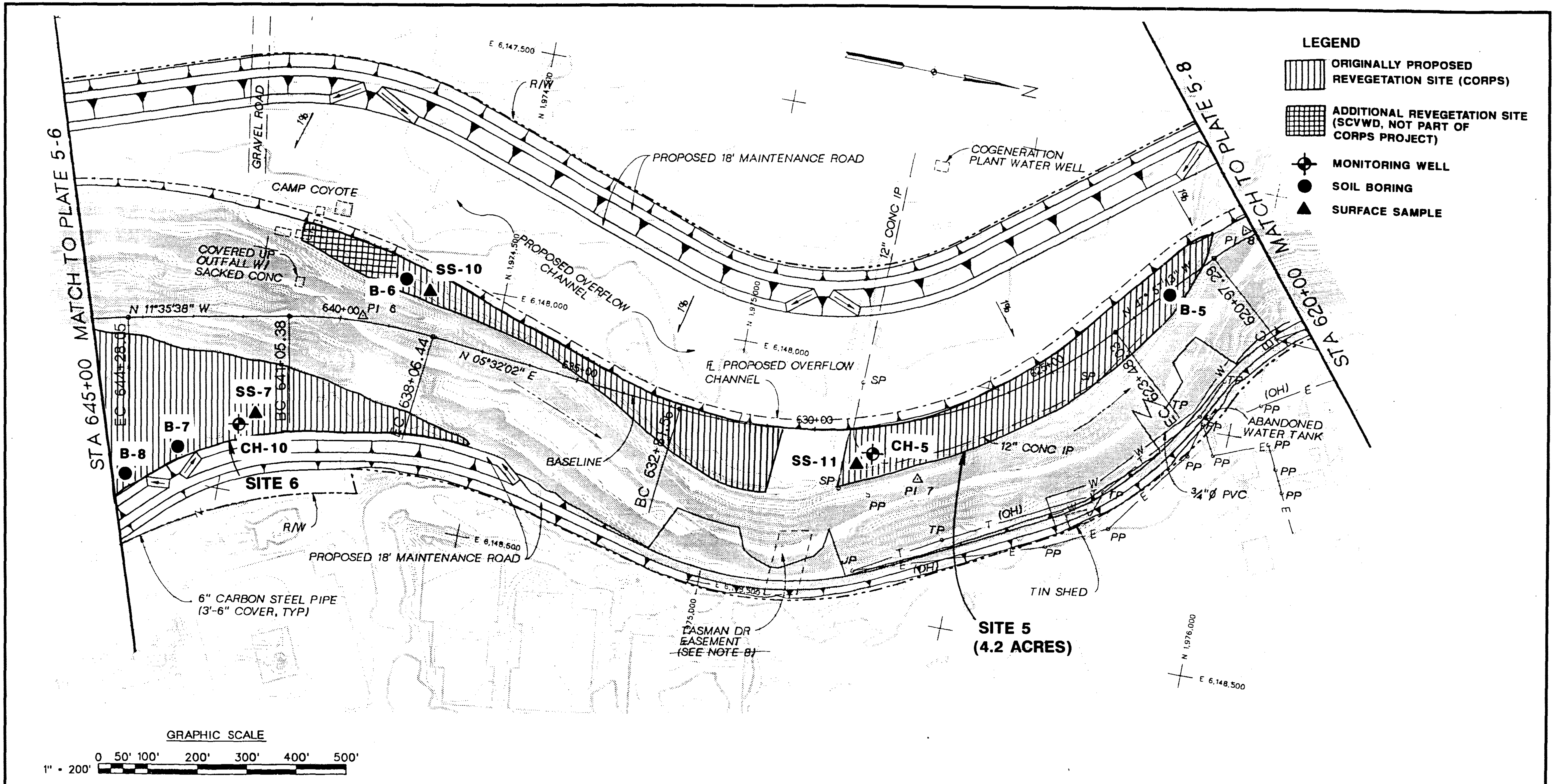
REACH 3
SOIL AND GROUNDWATER
SAMPLE LOCATIONS

CH2M HILL

DEC 1993

SFO31213.A1

PLATE 2



ENVIRONMENTAL ASSESSMENT
COYOTE CREEK ELEMENT OF
THE COYOTE AND BERRYESSA CREEKS, CALIFORNIA,
PROJECT

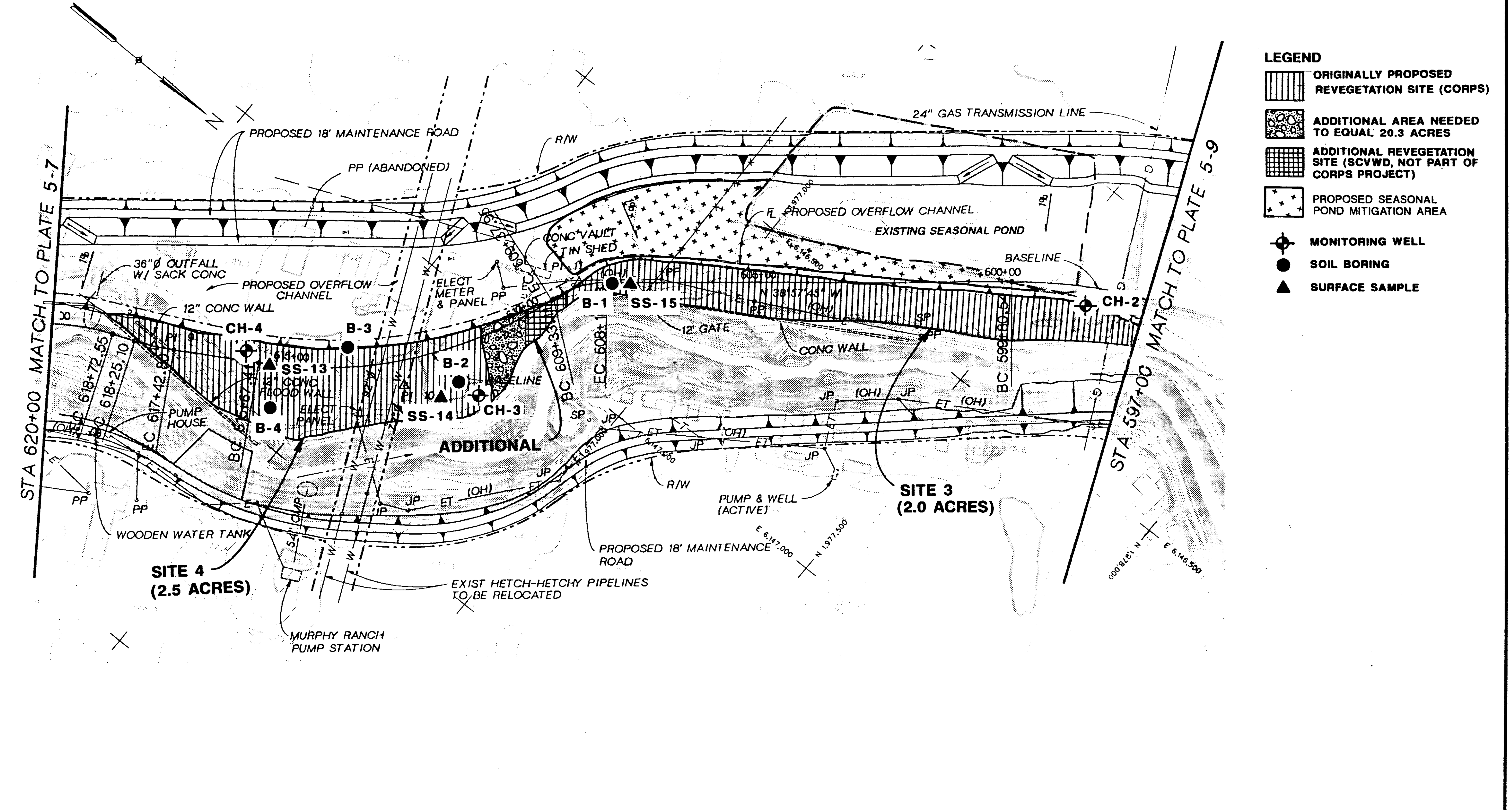
REACH 3
SOIL AND GROUNDWATER
SAMPLE LOCATIONS

CH2M HILL

DEC 1993

SFO31213.A1

PLATE 3



GRAPHIC SCALE
0 50' 100' 200' 300' 400' 500'
1" = 200'

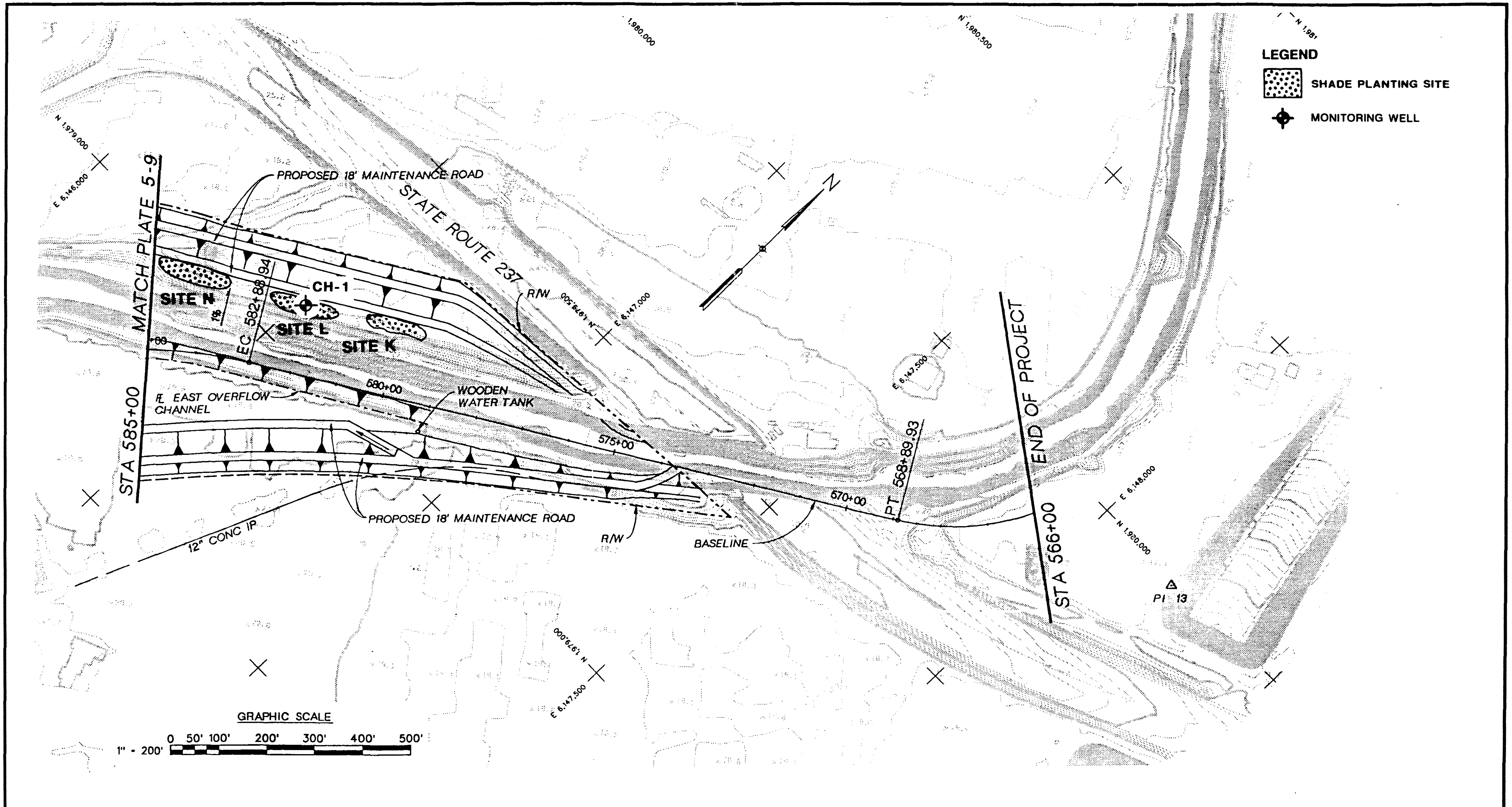
ENVIRONMENTAL ASSESSMENT
COYOTE CREEK ELEMENT OF
THE COYOTE AND BERRYESSA CREEKS, CALIFORNIA, PROJECT

REACH 3
SOIL AND GROUNDWATER
SAMPLE LOCATIONS

CH2M HILL

DEC 1993

PLATE 4



ENVIRONMENTAL ASSESSMENT
COYOTE CREEK ELEMENT OF
THE COYOTE AND BERRYESSA CREEKS, CALIFORNIA,
PROJECT

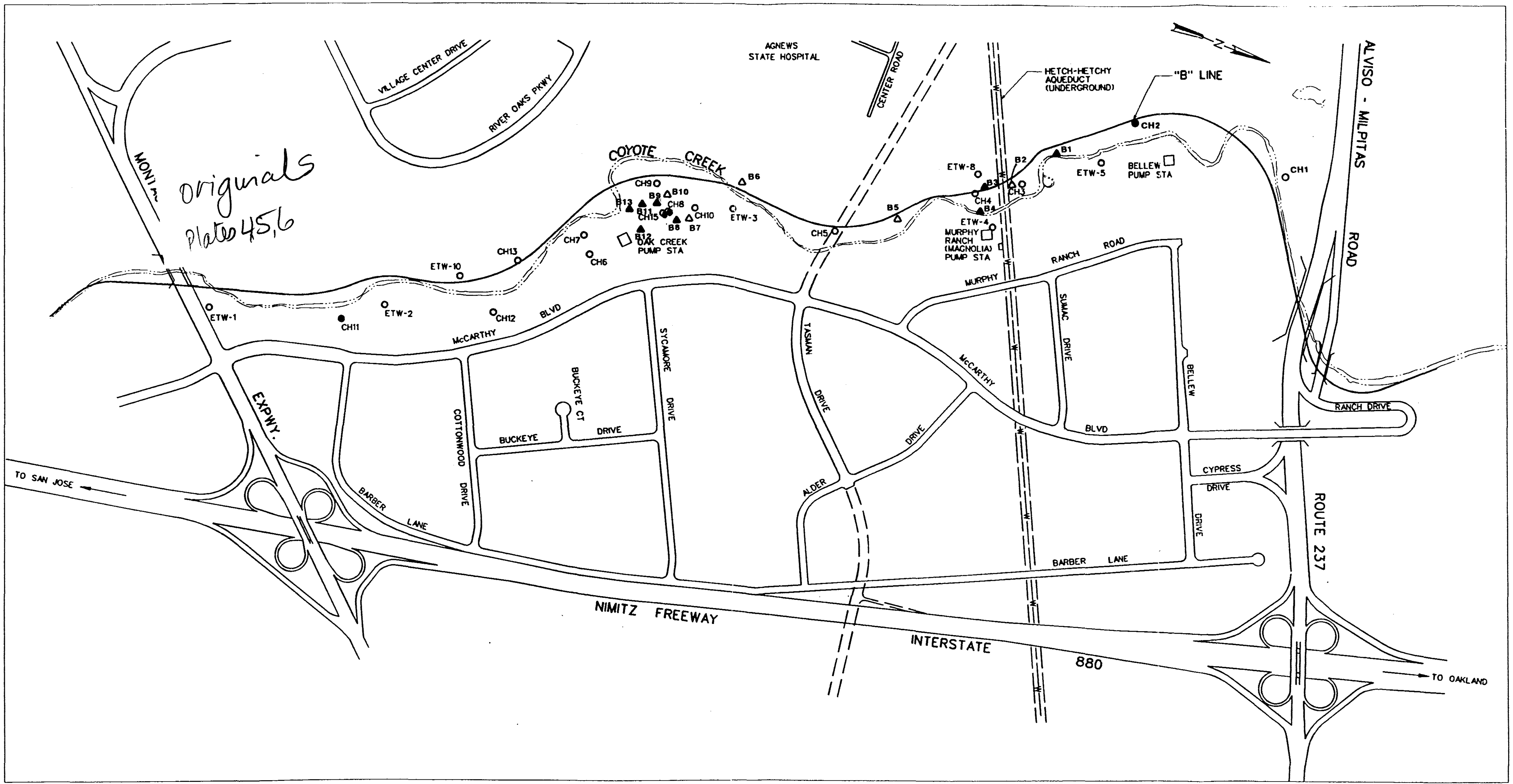
REACH 3
SOIL AND GROUNDWATER
SAMPLE LOCATIONS

CH2M HILL

DEC 1993

SFO31213.A1

PLATE 5



originals
Plates 4,5,6

Legend

● Well with clays above the water table

○ Well without clays above the water table

▲ Soil borings with calys above the water table

△ Soil borings without clays above the water table

PLATE 6
LOCATIONS OF CLAYS ABOVE THE WATER TABLE

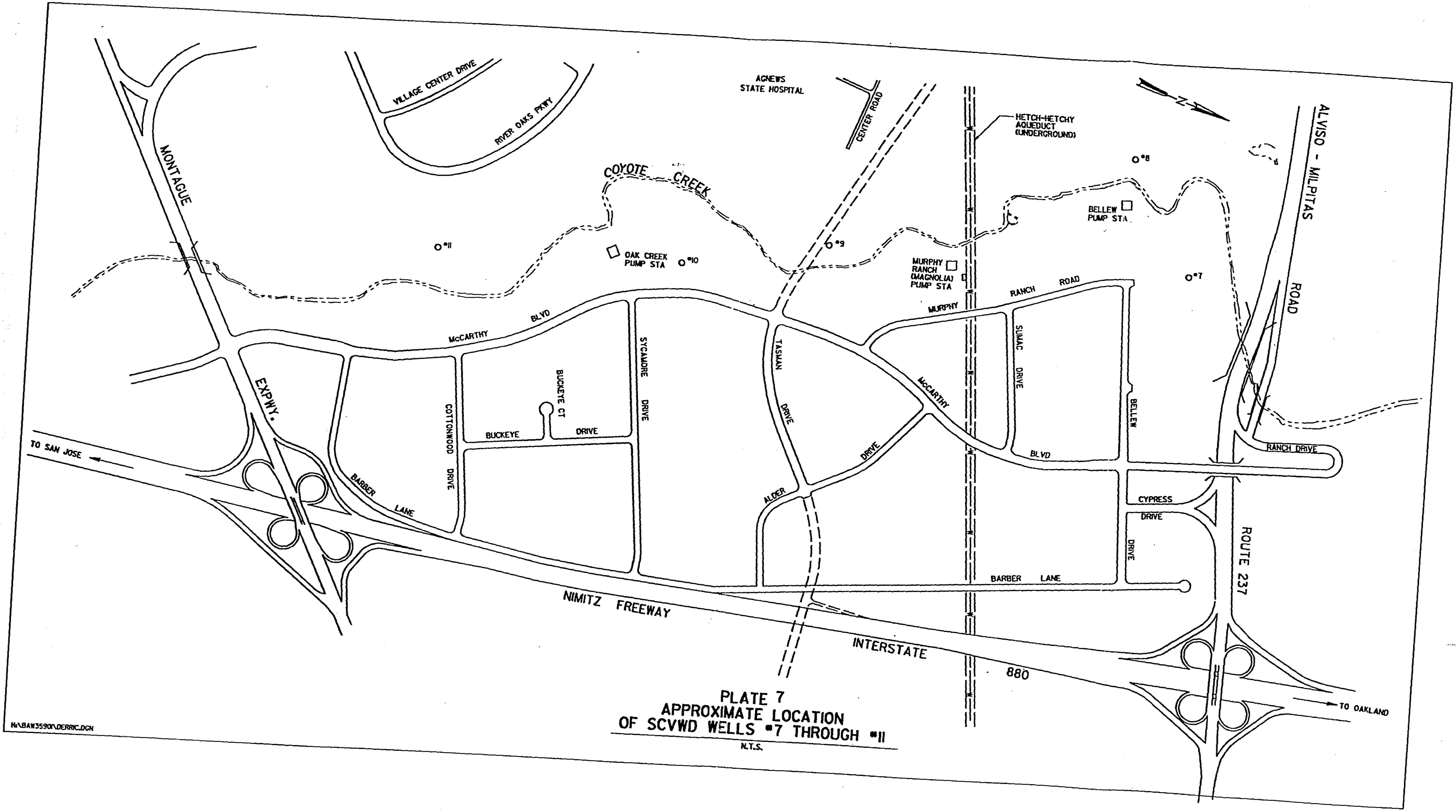
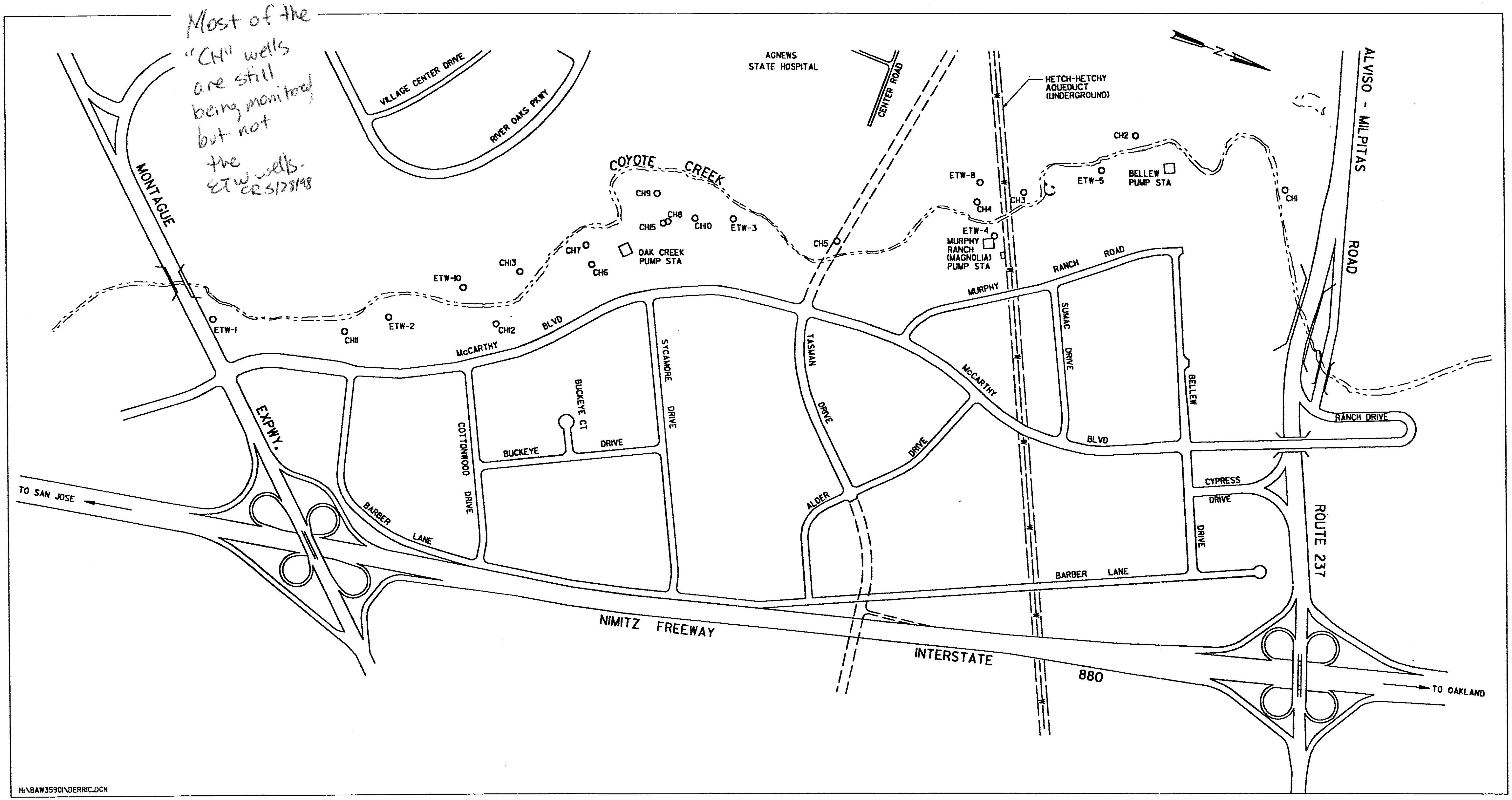


PLATE 7
APPROXIMATE LOCATION
OF SCVWD WELLS #7 THROUGH #11

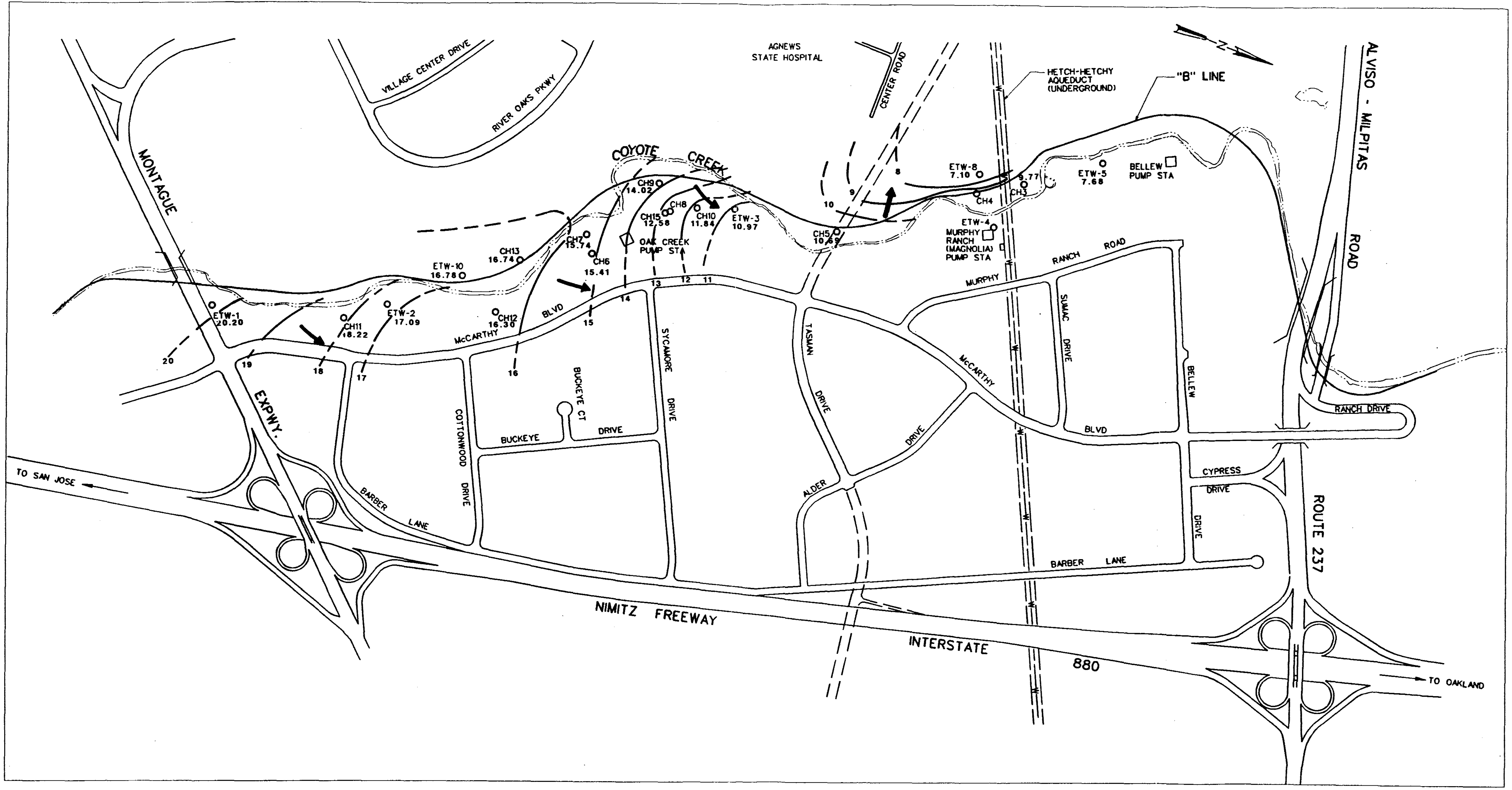
N.T.S.

H:\BAW35901\DERRIC.DGN



Most of the "CH" wells are still being monitored but not the ETW wells. CRS 5/28/98

PLATE 8
LOCATION OF
CH2M HILL AND RESNA WELLS



Legend

ETW-1 Well Number

20.20 Water Level

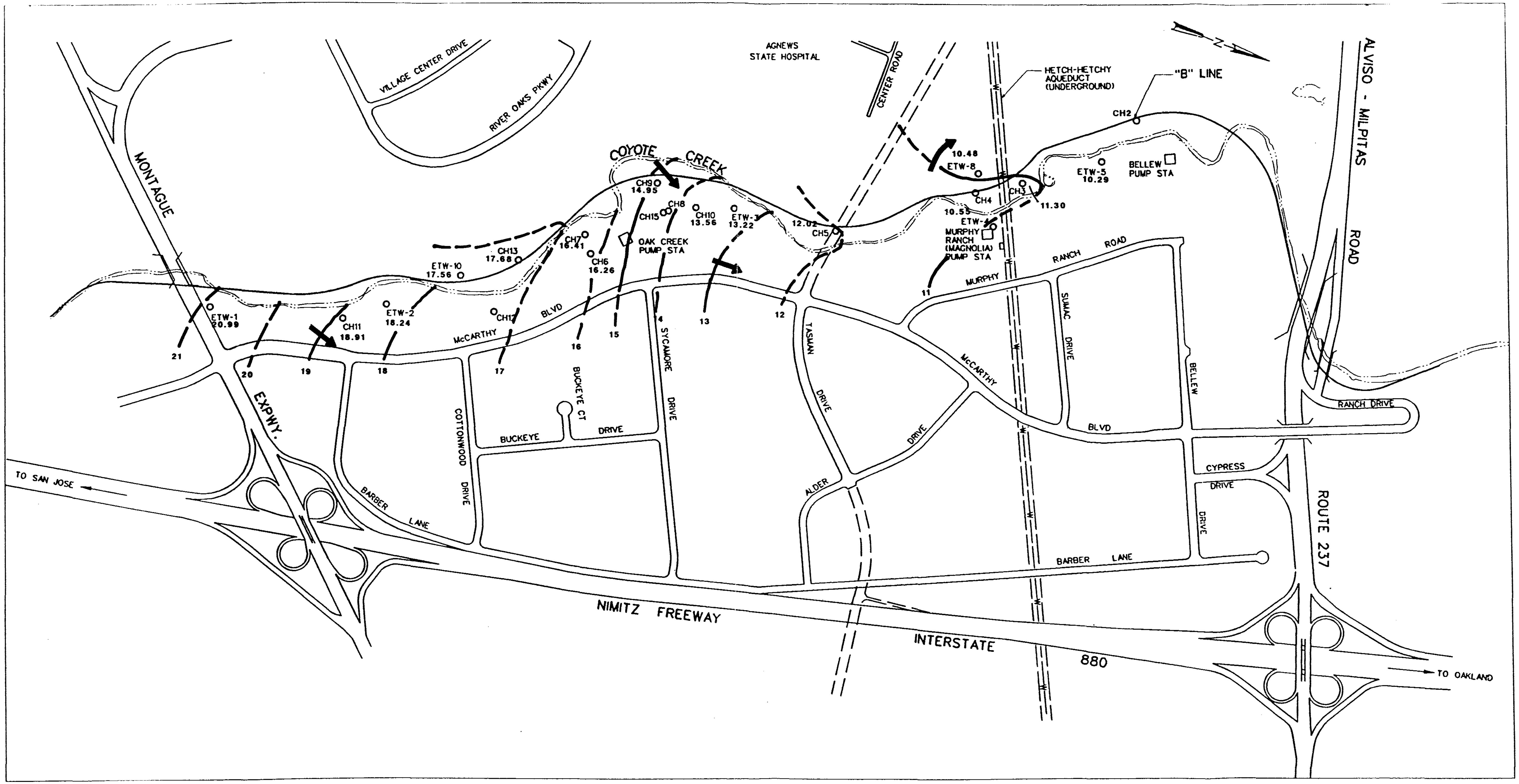
– – ——11 Equipotential Line (Dashed Wherf Inferred)

➡ Arrows Showing Estimated Flow Direction

PLATE 9
APPROXIMATE WATER ELEVATIONS
NOVEMBER, 1993

BAW35901.GW

CH2M HILL



Legend

○ ETW-1 Well Number

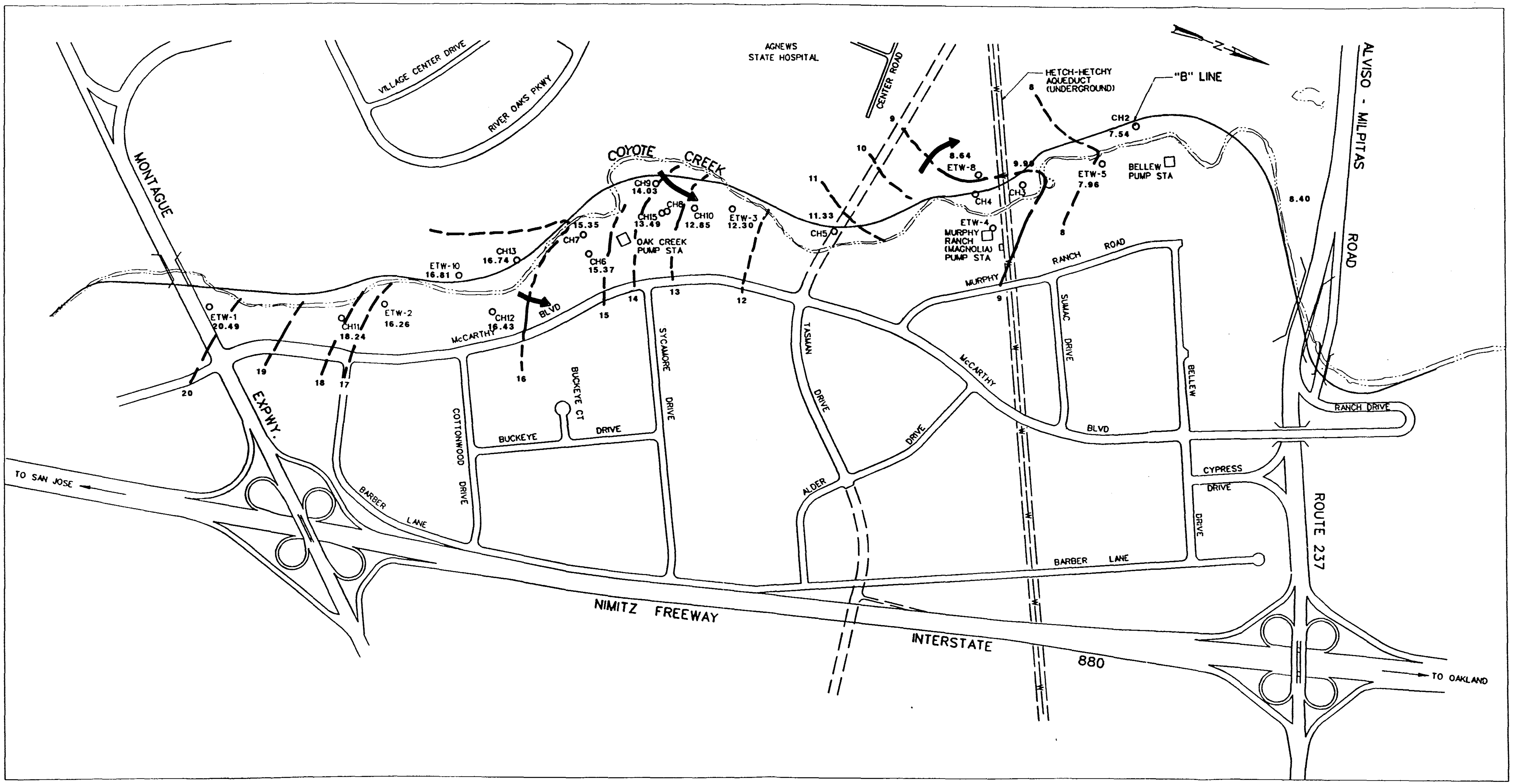
20.20 Water Level

— — ——11 Equipotential Line (Dashed Wherf Inferred)

➡ Arrows Showing Estimated Flow Direction

PLATE 10
APPROXIMATE WATER ELEVATIONS
MARCH, 1994

CH2M HILL



Legend

○ ETW-1 Well Number

20.20 Water Level

– – ——11 Equipotential Line (Dashed Wherf Inferred)

➡ Arrows Showing Estimated Flow Direction

PLATE 11
APPROXIMATE WATER ELEVATIONS
JULY, 1994

Appendix A
Soil Boring Logs

CH2M HILL

PROJECT NUMBER	BORING NUMBER
SF035901.GW.ZZ	B-1 SHEET 1 OF 1

SOIL BORING LOG

PROJECT Coyote Creek Revegitation **LOCATION** Site 3
ELEVATION Not Measured **DRILLING CONTRACTOR** Exploration Geoservices
DRILLING METHOD AND EQUIPMENT Truck mounted B-56 with 8"O.D. hollow stem augers
WATER LEVELS Not Encountered **START** 10/13/93 **FINISH** 10/13/93 **LOGGER** A Demorest

DEPTH BELOW SURFACE (FT)	SAMPLE			STANDARD PENETRATION TEST RESULTS	SOIL DESCRIPTION	COMMENTS
	INTERVAL	NUMBER AND TYPE	RECOVERY	6"-6"-6" (N)	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	DEPTH OF CASING, DRILLING RATE DRILLING FLUID LOSS TESTS AND INSTRUMENTATION
						Soil Classified based on SCS classification system
	2.0 3.0	B-1	-		SANDY LOAM, slightly moist, very fine sand, roots	2" ID split spoon sampler
5.0						
	7.5 9.0	S-2	1.3	6-8-11 (19)	SILTY CLAY LOAM, brown, moist, stiff to very stiff, very fine sand	
10.0						
						Driller notes change at approximately 13.0 feet
	14.0 15.0	B-3	-		SILTY CLAY, brown with tan, rust, and gray mottling, moist	
15.0					TOTAL DEPTH = 15.0 FEET	
20.0						
25.0						

CH2M HILL

PROJECT NUMBER SF035901.GW.ZZ

BORING NUMBER B-2

SHEET 1 OF 1

SOIL BORING LOG

PROJECT Coyote Creek Revegitation **LOCATION** Site 4

ELEVATION Not Measured **DRILLING CONTRACTOR** Exploration Geoservices

DRILLING METHOD AND EQUIPMENT Truck mounted B-56 with 8"O.D. hollow stem augers

WATER LEVELS Not Encountered **START** 10/13/93 **FINISH** 10/13/93 **LOGGER** A Demorest

DEPTH BELOW SURFACE (FT)	SAMPLE			STANDARD PENETRATION TEST RESULTS	SOIL DESCRIPTION	COMMENTS
	INTERVAL	NUMBER AND TYPE	RECOVERY	6"-6"-6" (N)	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	DEPTH OF CASING, DRILLING RATE DRILLING FLUID LOSS TESTS AND INSTRUMENTATION
						Soil Classified based on SCS classification system
	2.0 3.0	B-1	-		LOAM, dark brown, moist, very fine sand	2" ID split spoon sampler
5.0						
	7.5 9.0	S-2	1.3	3-3-4 (7)	LOAM, similar to above, moist to very moist	
					TOTAL DEPTH = 9.0 FEET	
10.0						
15.0						
20.0						
25.0						

CHM HILL

PROJECT NUMBER	BORING NUMBER
SF035901.GW.ZZ	B-3 SHEET 1 OF 1

SOIL BORING LOG

PROJECT Coyote Creek Revegitation **LOCATION** Site 4

ELEVATION Not Measured **DRILLING CONTRACTOR** Exploration Geoservices

DRILLING METHOD AND EQUIPMENT Truck mounted B-56 with 8"O.D. hollow stem augers

WATER LEVELS Not Encountered **START** 10/13/93 **FINISH** 10/13/93 **LOGGER** A Demorest

DEPTH BELOW SURFACE (FT)	SAMPLE			STANDARD PENETRATION TEST RESULTS	SOIL DESCRIPTION	COMMENTS
	INTERVAL	NUMBER AND TYPE	RECOVERY	6" -6" -6" (N)	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	DEPTH OF CASING, DRILLING RATE DRILLING FLUID LOSS TESTS AND INSTRUMENTATION
						Soil Classified based on SCS classification system
	2.0 3.0	B-1	-		LOAM, brown, slightly moist, very fine sand	2" ID split spoon sampler
5.0						
	7.5 9.0	S-2	1.3	3-4-6 (10)	SILTY CLAY LOAM, brown with gray mottling, moist to very moist, firm	
10.0						
	12.0 13.0	B-3	-		CLAY LOAM, gray-brown, moist, stiff, very fine sand	Driller notes clay at approximately 13.0 feet
15.0					TOTAL DEPTH = 15.0 FEET	
20.0						
25.0						

PROJECT NUMBER	BORING NUMBER
SF035901.GW.ZZ	B-4 SHEET 1 OF 1

SOIL BORING LOG

PROJECT Coyote Creek Revegitation **LOCATION** Site 4

ELEVATION Not Measured **DRILLING CONTRACTOR** Exploration Geoservices

DRILLING METHOD AND EQUIPMENT Truck mounted B-56 with 8"O.D. hollow stem augers

WATER LEVELS Not Encountered **START** 9/28/93 **FINISH** 9/28/93 **LOGGER** A Demorest

DEPTH BELOW SURFACE (FT)	SAMPLE			STANDARD PENETRATION TEST RESULTS	SOIL DESCRIPTION	COMMENTS
	INTERVAL	NUMBER AND TYPE	RECOVERY	6"-6"-6" (N)	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	DEPTH OF CASING, DRILLING RATE DRILLING FLUID LOSS TESTS AND INSTRUMENTATION
					LOAM, brown, slightly moist, very fine sand	Soil Classified based on SCS classification system Boring logged from cuttings
5.0						
					LOAM, similar to above, moist, some fine sand	
10.0						
					SILTY CLAY, brown, moist, very stiff	Driller notes change at approximately 13.0 feet
15.0						
20.0					CLAY LOAM, olive to tan with rust mottling, moist, very stiff, root channels, some $CaCO_3$ deposits	Driller notes change at approximately 20.0 feet
25.0					TOTAL DEPTH = 25.0 FEET	

CHM HILL

PROJECT NUMBER SF035901.GW.ZZ	**BORING NUMBER** B-5 SHEET 1 OF 1

SOIL BORING LOG

PROJECT Coyote Creek Revegitation **LOCATION** Site 5

ELEVATION Not Measured **DRILLING CONTRACTOR** Exploration Geoservices

DRILLING METHOD AND EQUIPMENT Truck mounted B-56 with 8"O.D. hollow stem augers

WATER LEVELS Not Measured **START** 10/13/93 **FINISH** 10/13/93 **LOGGER** A Demorest

DEPTH BELOW SURFACE (FT)	SAMPLE			STANDARD PENETRATION TEST RESULTS	SOIL DESCRIPTION	COMMENTS
	INTERVAL	NUMBER AND TYPE	RECOVERY	6"-6"-6" (N)	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	DEPTH OF CASING, DRILLING RATE DRILLING FLUID LOSS TESTS AND INSTRUMENTATION
						Soil Classified based on SCS classification system
	2.0 3.0	B-1	-		LOAM, brown, slightly moist, very fine sand	2" ID split spoon sampler
5.0						
	7.5 9.0	S-2	1.4	4-5-7 (12)	Grades between SILT LOAM and SANDY LOAM, brown, moist, very fine sand	
10.0						
					LOAMY SAND, brown, wet, very fine sand	Driller notes change at approximately 14.0 feet
15.0					TOTAL DEPTH = 15.0 FEET	
20.0						
25.0						

PROJECT NUMBER SF035901.GW.ZZ	**BORING NUMBER** B-6 SHEET 1 OF 1

SOIL BORING LOG

PROJECT Coyote Creek Revegitation **LOCATION** Site 5

ELEVATION Not Measured **DRILLING CONTRACTOR** Exploration Geoservices

DRILLING METHOD AND EQUIPMENT Truck mounted B-56 with 8"O.D. hollow stem augers

WATER LEVELS Not Encountered **START** 10/13/93 **FINISH** 10/13/93 **LOGGER** A Demorest

DEPTH BELOW SURFACE (FT)	SAMPLE			STANDARD PENETRATION TEST RESULTS	SOIL DESCRIPTION	COMMENTS
	INTERVAL	NUMBER AND TYPE	RECOVERY	6"-6"-6" (N)	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	DEPTH OF CASING, DRILLING RATE DRILLING FLUID LOSS TESTS AND INSTRUMENTATION
						Soil Classified based on SCS classification system
	2.0 3.0	B-1	-		LOAM, brown, slightly moist, very fine sand	2" ID split spoon sampler
5.0						
	7.5 9.0	S-2	1.4	4-6-12 (18)	SILTY CLAY LOAM, brown with slight gray mottling, moist, stiff	
10.0						
	12.0 13.0	B-3	-		LOAM, brown, moist, very fine sand CLAY, brown, moist, stiff to very stiff	Driller notes clay at approximately 13.0 feet
					TOTAL DEPTH = 14.0 FEET	
15.0						
20.0						
25.0						

CH2M HILL

PROJECT NUMBER SF035901.GW.ZZ

BORING NUMBER B-7

SHEET 1 OF 1

SOIL BORING LOG

PROJECT Coyote Creek Revegitation

LOCATION Site 6

ELEVATION Not Measured

DRILLING CONTRACTOR Exploration Geoservices

DRILLING METHOD AND EQUIPMENT Truck mounted B-56 with 8"O.D. hollow stem augers

WATER LEVELS Not Measured

START 9/27/93

FINISH 9/27/93

LOGGER A Demorest

DEPTH BELOW SURFACE (FT)	SAMPLE			STANDARD PENETRATION TEST RESULTS	SOIL DESCRIPTION	COMMENTS
	INTERVAL	NUMBER AND TYPE	RECOVERY	6"-6"-6" (N)	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	DEPTH OF CASING, DRILLING RATE DRILLING FLUID LOSS TESTS AND INSTRUMENTATION
					SILT LOAM, brown, slightly moist, very fine sand	Soil Classified based on SCS classification system Boring logged from cuttings
5.0						
					LOAM, brown, moist, very fine sand.	
10.0						
					LOAM, similar to above, wet	
					TOTAL DEPTH = 14.0 FEET	
15.0						
20.0						
25.0						

CH2M HILL

PROJECT NUMBER	BORING NUMBER
SF035901.GW.ZZ	B-8 SHEET 1 OF 1

SOIL BORING LOG

PROJECT Coyote Creek Revegitation **LOCATION** Site 6

ELEVATION Not Measured **DRILLING CONTRACTOR** Exploration Geoservices

DRILLING METHOD AND EQUIPMENT Truck mounted B-56 with 8"O.D. hollow stem augers

WATER LEVELS Not Encountered **START** 9/27/93 **FINISH** 9/27/93 **LOGGER** A Demorest

DEPTH BELOW SURFACE (FT)	SAMPLE			STANDARD PENETRATION TEST RESULTS	SOIL DESCRIPTION	COMMENTS
	INTERVAL	NUMBER AND TYPE	RECOVERY	6"-6"-6" (N)	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	DEPTH OF CASING, DRILLING RATE DRILLING FLUID LOSS TESTS AND INSTRUMENTATION
					LOAM, brown, slightly moist, very fine sand	Soil Classified based on SCS classification system Boring logged from cuttings
					LOAM, brown, moist, very fine sand	
5.0						
					LOAM, similar to above	
10.0						
					CLAY, dark grayish brown, moist, stiff to very stiff	Driller notes change at approximately 12 feet
15.0						
20.0					CLAY, similar to above	
25.0	25.0 26.5	S-1	1.5	No Count ( )	CLAY, blue-gray with extensive iron oxide staining, moist, very stiff, organics	2" ID split spoon sampler
					TOTAL DEPTH = 26.5 FEET	

CH2M HILL

PROJECT NUMBER	BORING NUMBER
SF035901.GW.ZZ	B-9 SHEET 1 OF 1

SOIL BORING LOG

PROJECT Coyote Creek Revegitation **LOCATION** Site 6

ELEVATION Not Measured **DRILLING CONTRACTOR** Exploration Geoservices

DRILLING METHOD AND EQUIPMENT Truck mounted B-56 with 8"O.D. hollow stem augers

WATER LEVELS Not Encountered **START** 9/27/93 **FINISH** 9/27/93 **LOGGER** A Demorest

DEPTH BELOW SURFACE (FT)	SAMPLE			STANDARD PENETRATION TEST RESULTS	SOIL DESCRIPTION	COMMENTS
	INTERVAL	NUMBER AND TYPE	RECOVERY	6"-6"-6" (N)	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	DEPTH OF CASING, DRILLING RATE DRILLING FLUID LOSS TESTS AND INSTRUMENTATION
						Soil Classified based on SCS classification system Boring logged from cuttings
					LOAM, brown, slightly moist, very fine sand	
5.0						
					LOAM, similar to above, moist	
10.0						
						Driller notes clay at approximately 12.0 feet
					CLAY, dark brown, moist, stiff to very stiff	
15.0						
					TOTAL DEPTH = 16.0 FEET	
20.0						
25.0						

CH2M HILL

PROJECT NUMBER SF035901.GW.ZZ

BORING NUMBER B-10

SHEET 1 OF 1

SOIL BORING LOG

PROJECT Coyote Creek Revegitation **LOCATION** Site 6

ELEVATION Not Measured **DRILLING CONTRACTOR** Exploration Geoservices

DRILLING METHOD AND EQUIPMENT Truck mounted B-56 with 8"O.D. hollow stem augers

WATER LEVELS Not Measured **START** 9/27/93 **FINISH** 9/27/93 **LOGGER** A Demorest

DEPTH BELOW SURFACE (FT)	SAMPLE			STANDARD PENETRATION TEST RESULTS	SOIL DESCRIPTION	COMMENTS
	INTERVAL	NUMBER AND TYPE	RECOVERY	6"-6"-6" (N)	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	DEPTH OF CASING, DRILLING RATE DRILLING FLUID LOSS TESTS AND INSTRUMENTATION
					SILT LOAM, brown, slightly moist, very fine sand	Soil Classified based on SCS classification system Boring logged from cuttings
5.0						
					SILT LOAM, brown, moist, stiff, low sand content	
10.0						
					LOAM, brown, moist, fine sand	
15.0					LOAM, similar to above, wet	
					TOTAL DEPTH = 16.0 FEET	
20.0						
25.0						

CH2M HILL

PROJECT NUMBER SF035901.GW.ZZ	**BORING NUMBER** B-11 SHEET 1 OF 1

SOIL BORING LOG

PROJECT Coyote Creek Revegitation **LOCATION** Site 6

ELEVATION Not Measured **DRILLING CONTRACTOR** Exploration Geoservices

DRILLING METHOD AND EQUIPMENT Truck mounted B-56 with 8"O.D. hollow stem augers

WATER LEVELS Not Encountered **START** 9/27/93 **FINISH** 9/27/93 **LOGGER** A Demorest

DEPTH BELOW SURFACE (FT)	SAMPLE			STANDARD PENETRATION TEST RESULTS	SOIL DESCRIPTION	COMMENTS
	INTERVAL	NUMBER AND TYPE	RECOVERY	6"-6"-6" (N)	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	DEPTH OF CASING, DRILLING RATE DRILLING FLUID LOSS TESTS AND INSTRUMENTATION
						Soil Classified based on SCS classification system Boring logged from cuttings
					LOAM, brown, slightly moist, very fine sand	
5.0						
					LOAM, similar to above, moist	
10.0						
					CLAY, dark brown, moist, stiff to very stiff	Driller notes change at approximately 11.0 feet
15.0					CLAY, similar to above	
					TOTAL DEPTH = 16.0 FEET	
20.0						
25.0						

CH2M HILL

PROJECT NUMBER	BORING NUMBER
SF035901.GW.ZZ	B-12 SHEET 1 OF 1

SOIL BORING LOG

PROJECT Coyote Creek Revegitation LOCATION Site 6
ELEVATION Not Measured DRILLING CONTRACTOR Exploration Geoservices
DRILLING METHOD AND EQUIPMENT Truck mounted B-56 with 8"O.D. hollow stem augers
WATER LEVELS Not Encountered START 9/27/93 FINISH 9/27/93 LOGGER A Demorest

DEPTH BELOW SURFACE (FT)	SAMPLE			STANDARD PENETRATION TEST RESULTS	SOIL DESCRIPTION	COMMENTS
	INTERVAL	NUMBER AND TYPE	RECOVERY	6" -6" -6" (N)	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	DEPTH OF CASING, DRILLING RATE DRILLING FLUID LOSS TESTS AND INSTRUMENTATION
						Soil Classified based on SCS classification system Boring logged from cuttings
					LOAM, brown, slightly moist, very fine sand	
5.0						
					LOAM, similar to above, moist	
10.0						
					CLAY, dark gray-brown, moist, stiff to very stiff	Driller notes clay at approximately 12.0 feet
					TOTAL DEPTH = 13.0 FEET .	
15.0						
20.0						
25.0						

CH2M HILL

PROJECT NUMBER	BORING NUMBER
SF035901.GW.ZZ	B-13 SHEET 1 OF 1

SOIL BORING LOG

PROJECT Coyote Creek Revegitation **LOCATION** Site 6

ELEVATION Not Measured **DRILLING CONTRACTOR** Exploration Geoservices

DRILLING METHOD AND EQUIPMENT Truck mounted B-56 with 8"O.D. hollow stem augers

WATER LEVELS Not Encountered **START** 10/13/93 **FINISH** 10/13/93 **LOGGER** A Demorest

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING RATE DRILLING FLUID LOSS TESTS AND INSTRUMENTATION
					SILT LOAM, light brown, dry, very fine sand	Soil Classified based on SCS classification system Boring logged from cuttings
5.0						
					LOAM, brown, moist, very fine sand	Driller notes change at approximately 6.0 feet
10.0						
					CLAY, dark gray-brown, moist, stiff to very stiff	Driller notes clay at approximately 14.0 feet
15.0					TOTAL DEPTH = 15.0 FEET	
20.0						
25.0						

CH2M HILL

PROJECT NUMBER	BORING NUMBER
SF035901.GW.ZZ	B-14 SHEET 1 OF 1

SOIL BORING LOG

PROJECT Coyote Creek Revegitation **LOCATION** Site 6

ELEVATION Not Measured **DRILLING CONTRACTOR** Exploration Geoservices

DRILLING METHOD AND EQUIPMENT Truck mounted B-56 with 8"O.D. hollow stem augers

WATER LEVELS Not Encountered **START** 10/13/93 **FINISH** 10/13/93 **LOGGER** A Demorest

DEPTH BELOW SURFACE (FT)	SAMPLE			STANDARD PENETRATION TEST RESULTS	SOIL DESCRIPTION	COMMENTS
	INTERVAL	NUMBER AND TYPE	RECOVERY	6"-6"-6" (N)	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	DEPTH OF CASING, DRILLING RATE DRILLING FLUID LOSS TESTS AND INSTRUMENTATION
						Soil Classified based on SCS classification system
	2.0 3.0	B-1	-		LOAM, brown, slightly moist, very fine sand	2" ID split spoon sampler
5.0						
10.0	9.0 10.5	S-2	1.5	4-6-8 (14)	LOAM, brown with gray mottling, very moist to wet, stiff	
					TOTAL DEPTH = 10.5 FEET	
15.0						
20.0						
25.0						

CH2M HILL

PROJECT NUMBER SF035901.GW.ZZ

BORING NUMBER CH-1 SHEET 1 OF 1

SOIL BORING LOG

PROJECT Coyote Creek Revegitation **LOCATION** Site L

ELEVATION Not Measured **DRILLING CONTRACTOR** Exploration Geoservices

DRILLING METHOD AND EQUIPMENT Truck mounted B-56 with 8"O.D. hollow stem augers

WATER LEVELS Approx. 10.5' bgs **START** 5/4/94 **FINISH** 5/4/94 **LOGGER** A Demorest

DEPTH BELOW SURFACE (FT)	SAMPLE			STANDARD PENETRATION TEST RESULTS	SOIL DESCRIPTION	COMMENTS
	INTERVAL	NUMBER AND TYPE	RECOVERY	6"-6"-6" (N)	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	DEPTH OF CASING, DRILLING RATE DRILLING FLUID LOSS TESTS AND INSTRUMENTATION
						Soil Classified based on SCS classification system Boring logged from cuttings
	2.0 3.0	B-1	-		CLAY LOAM, brown, dry, very fine sand	
5.0						Driller notes color change at approximately 5 feet
					LOAM, dark brown, moist, sandier than above, very fine sand	Dirller notes some gravels (approx. 2" max size) at 7 feet
	9.0 10.0	B-2	-		SANDY CLAY LOAM, gray with black, moist soft, some small pebbles, organics, very fine sand	Driller notes change at approximately 9 feet
10.0						
					SANDY CLAY LOAM, gray, soft, moister than above, no organics, very fine sand	Driller notes smoe gravel, groundwater at approximately 13.5 feet
15.0						
20.0					SILTY CLAY, light brown, moist, stiff	Driller notes change at approximately 20 feet, stiffer
25.0					TOTAL DEPTH = 25.0 FEET	Well screened from 10.0 to 25.0 feet bgs Sand pack to 8.0 feet bgs Bentonite seal to 7.0 feet bgs Grout to surface

PROJECT NUMBER	**BORING NUMBER**
SF035901.GW.ZZ	CH-2 SHEET 1 OF 1

SOIL BORING LOG

PROJECT Coyote Creek Revegitation **LOCATION** Site 3
ELEVATION Not Measured **DRILLING CONTRACTOR** Exploration Geoservices
DRILLING METHOD AND EQUIPMENT Truck mounted B-56 with 8"O.D. hollow stem augers
WATER LEVELS Approx. 12' bgs **START** 5/4/94 **FINISH** 5/4/94 **LOGGER** A Demorest

DEPTH BELOW SURFACE (FT)	SAMPLE			STANDARD PENETRATION TEST RESULTS	SOIL DESCRIPTION	COMMENTS
	INTERVAL	NUMBER AND TYPE	RECOVERY	6"-6"-6" (N)	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	DEPTH OF CASING, DRILLING RATE DRILLING FLUID LOSS TESTS AND INSTRUMENTATION
	2.0					Soil Classified based on SCS classification system Boring logged from cuttings
	3.0	B-1	-		LOAM, brown, dry, very fine sand	
5.0						
					LOAM, similar to above, moist	
10.0						
	11.0					
	12.0	B-2	-		CLAY, light brown, moist, stiff, some very fine sand	Driller notes change at approximately 11 feet
15.0						
20.0					CLAY, similar to above, moister, softer	Driller notes water
25.0					TOTAL DEPTH = 25.0 FEET	Well screened from 10.0 to 25.0 feet bgs Sand pack to 8.0 feet bgs Bentonite seal to 7.0 feet bgs Grout to surface

CH2M HILL

PROJECT NUMBER SF035901.GW.ZZ	**BORING NUMBER** CH-3	SHEET 1 OF 1

SOIL BORING LOG

PROJECT Coyote Creek Revegitation **LOCATION** Site 4

ELEVATION Not Measured **DRILLING CONTRACTOR** Exploration Geoservices

DRILLING METHOD AND EQUIPMENT Truck mounted B-56 with 8"O.D. hollow stem augers

WATER LEVELS Not Measured **START** 9/28/93 **FINISH** 9/28/93 **LOGGER** A Demorest

DEPTH BELOW SURFACE (FT)	SAMPLE			STANDARD PENETRATION TEST RESULTS	SOIL DESCRIPTION	COMMENTS
	INTERVAL	NUMBER AND TYPE	RECOVERY	6"-6"-6" (N)	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	DEPTH OF CASING, DRILLING RATE DRILLING FLUID LOSS TESTS AND INSTRUMENTATION
					LOAM, Dark brown, moist, very fine sand	Soil Classified based on SCS classification system Boring logged from cuttings
5.0						
					LOAM, similar to above, very moist, grading sandier with depth	
10.0						
15.0					SANDY LOAM, dark brown, wet, very fine sand	
20.0					SANDY LOAM, dark gray, wet, very fine sand	Driller notes change at approximately 20 feet
					Grades between LOAM and SANDY LOAM, dark gray, wet, fine to very fine sand, some organics	Driller notes silty layer at approximately 23 feet
25.0					TOTAL DEPTH = 25.0 FEET	Well screened from 10.0 to 25.0 feet bgs Sand pack to 8.0 feet bgs Bentonite seal to 7.0 feet bgs Grout to surface

CH2M HILL

PROJECT NUMBER	BORING NUMBER
SF035901.GW.ZZ	CH-4 SHEET 1 OF 1

SOIL BORING LOG

PROJECT Coyote Creek Revegitation LOCATION Site 4

ELEVATION Not Measured DRILLING CONTRACTOR Exploration Geoservices

DRILLING METHOD AND EQUIPMENT Truck mounted B-56 with 8"O.D. hollow stem augers

WATER LEVELS Not Encountered START 9/28/93 FINISH 9/28/93 LOGGER A Demorest

DEPTH BELOW SURFACE (FT)	SAMPLE			STANDARD PENETRATION TEST RESULTS	SOIL DESCRIPTION	COMMENTS
	INTERVAL	NUMBER AND TYPE	RECOVERY	6"-6"-6" (N)	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	DEPTH OF CASING, DRILLING RATE DRILLING FLUID LOSS TESTS AND INSTRUMENTATION
					LOAM, brown, slightly moist, very fine sand	Soil Classified based on SCS classification system Boring logged from cuttings
5.0						
					LOAM, similar to above, slightly moister	
10.0						
					CLAY, brown, slightly moist, stiff to very stiff, contains very fine sand TOTAL DEPTH = 12.5 FEET	Driller notes clay at approximately 12 feet
						Well screened from 7.0 to 12.0 feet bgs Sand pack to 5.0 feet bgs Bentonite seal to 4.0 feet bgs Grout to surface
15.0						
20.0						
25.0						

CH2M HILL

PROJECT NUMBER	BORING NUMBER
SF035901.GW.ZZ	CH-5 SHEET 1 OF 1

SOIL BORING LOG

PROJECT Coyote Creek Revegitation LOCATION Site 5

ELEVATION Not Measured DRILLING CONTRACTOR Exploration Geoservices

DRILLING METHOD AND EQUIPMENT Truck mounted B-56 with 8"O.D. hollow stem augers

WATER LEVELS Not Measured START 9/28/93 FINISH 9/28/93 LOGGER A Demorest

DEPTH BELOW SURFACE (FT)	SAMPLE			STANDARD PENETRATION TEST RESULTS	SOIL DESCRIPTION	COMMENTS
	INTERVAL	NUMBER AND TYPE	RECOVERY	6"-6"-6" (N)	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	DEPTH OF CASING, DRILLING RATE DRILLING FLUID LOSS TESTS AND INSTRUMENTATION
					SANDY LOAM, brown, slightly moist, very fine sand	Soil Classified based on SCS classification system Boring logged from cuttings
5.0						
					LOAM, brown, moist, very fine sand	
10.0						
					LOAM, similar to above, very moist	
15.0						
					SANDY LOAM, gray, wet very fine sand, high fines content	
						Driller notes change at approximately 18 feet
20.0					SANDY LOAM, dark gray, wet, fine sand, less silty than above	
25.0					TOTAL DEPTH = 25.0 FEET	Well screened from 10.0 to 25.0 feet bgs Sand pack to 8.0 feet bgs Bentonite seal to 7.0 feet bgs Grout to surface

CH2M HILL

PROJECT NUMBER	BORING NUMBER
SF035901.GW.ZZ	CH-6 SHEET 1 OF 1

SOIL BORING LOG

PROJECT Coyote Creek Revegitation **LOCATION** Site 6
ELEVATION Not Measured **DRILLING CONTRACTOR** Exploration Geoservices
DRILLING METHOD AND EQUIPMENT Truck mounted B-56 with 8"O.D. hollow stem augers
WATER LEVELS Approx. 16.5' bgs **START** 9/27/93 **FINISH** 9/27/93 **LOGGER** A Demorest

DEPTH BELOW SURFACE (FT)	SAMPLE			STANDARD PENETRATION TEST RESULTS	SOIL DESCRIPTION	COMMENTS
	INTERVAL	NUMBER AND TYPE	RECOVERY	6"-6"-6" (N)	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	DEPTH OF CASING, DRILLING RATE DRILLING FLUID LOSS TESTS AND INSTRUMENTATION
					LOAM, brown, dry, very fine sand	Soil Classified based on SCS classification system Boring logged from cuttings
5.0					LOAM, brown, slightly moist, very fine sand, some very sandy lenses	
10.0					LOAM, similar to above	
						Driller notes change at approximately 12 feet
					SANDY LOAM, brown, wet, well graded sand, max. particle size ~½", low fines content	
15.0						
					SILT LOAM, brown, moist, stiff, well graded sand	Driller notes silt lens between approximately 17 to 18 feet
20.0					SANDY LOAM WITH GRAVEL, brown, wet, well graded sand, max. particle size ~1"	
					CLAY LOAM, brown, moist, stiff	Driller notes change at approximately 24 feet
25.0					TOTAL DEPTH = 25.0 FEET	
						Well screened from 10.0 to 25.0 feet bgs Sand pack to 8.0 feet bgs Bentonite seal to 7.0 feet bgs Grout to surface

CH2M HILL

PROJECT NUMBER SF035901.GW.ZZ	**BORING NUMBER** CH-7 SHEET 1 OF 1

SOIL BORING LOG

PROJECT Coyote Creek Revegitation **LOCATION** Site 6

ELEVATION Not Measured **DRILLING CONTRACTOR** Exploration Geoservices

DRILLING METHOD AND EQUIPMENT Truck mounted B-56 with 8"O.D. hollow stem augers

WATER LEVELS Not Measured **START** 9/27/93 **FINISH** 9/27/93 **LOGGER** A Demorest

DEPTH BELOW SURFACE (FT)	SAMPLE			STANDARD PENETRATION TEST RESULTS	SOIL DESCRIPTION	COMMENTS
	INTERVAL	NUMBER AND TYPE	RECOVERY	6" -6" -6" (N)	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	DEPTH OF CASING, DRILLING RATE DRILLING FLUID LOSS TESTS AND INSTRUMENTATION
					SILT LOAM, brown, dry, very fine sand	Soil Classified based on SCS classification system Boring logged from cuttings
5.0						
					LOAM, brown, slightly moist, well graded sand, max. particle size ~½"	Driller notes change at approximately 7 to 8 feet
10.0					SANDY LOAM WITH GRAVEL, brown, moist, well graded sand, max. particle size ~2", few gravels	
15.0					SANDY LOAM WITH GRAVEL, similar to above, wet	
20.0					SAND WITH GRAVEL, multicolored, wet, well graded sand, high gravel content, max. particle size ~1½"	
					SAND WITH GRAVEL, similar to above	
25.0					TOTAL DEPTH = 25.0 FEET	Well screened from 10.0 to 25.0 feet bgs Sand pack to 8.0 feet bgs Bentonite seal to 7.0 feet bgs Grout to surface

CH2M HILL

PROJECT NUMBER SF035901.GW.ZZ	**BORING NUMBER** CH-8 SHEET 1 OF 1

SOIL BORING LOG

PROJECT Coyote Creek Revegitation **LOCATION** Site 6

ELEVATION Not Measured **DRILLING CONTRACTOR** Exploration Geoservices

DRILLING METHOD AND EQUIPMENT Truck mounted B-56 with 8"O.D. hollow stem augers

WATER LEVELS Not Encountered **START** 9/27/93 **FINISH** 9/27/93 **LOGGER** A Demorest

DEPTH BELOW SURFACE (FT)	SAMPLE			STANDARD PENETRATION TEST RESULTS	SOIL DESCRIPTION	COMMENTS
	INTERVAL	NUMBER AND TYPE	RECOVERY	6" -6" -6" (N)	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	DEPTH OF CASING, DRILLING RATE DRILLING FLUID LOSS TESTS AND INSTRUMENTATION
					LOAM, brown, slightly moist, very fine sand	Soil Classified based on SCS classification system Boring logged from cuttings
5.0						
					LOAM, brown, moist, very fine sand	
10.0						
					CLAY, dark brown, moist	
					TOTAL DEPTH = 12.5 FEET	Well screened from 7.0 to 12.0 feet Sand pack to 5.0 feet bgs Bentonite seal to 4.0 feet bgs Grout to surface
15.0						
20.0						
25.0						

CH2M HILL

PROJECT NUMBER	BORING NUMBER
SF035901.GW.ZZ	CH-9 SHEET 1 OF 1

SOIL BORING LOG

PROJECT Coyote Creek Revegitation **LOCATION** Site 6

ELEVATION Not Measured **DRILLING CONTRACTOR** Exploration Geoservices

DRILLING METHOD AND EQUIPMENT Truck mounted B-56 with 8"O.D. hollow stem augers

WATER LEVELS Approx. 13.5' bgs **START** 9/27/93 **FINISH** 9/27/93 **LOGGER** A Demorest

DEPTH BELOW SURFACE (FT)	SAMPLE			STANDARD PENETRATION TEST RESULTS	SOIL DESCRIPTION	COMMENTS
	INTERVAL	NUMBER AND TYPE	RECOVERY	6"-6"-6" (N)	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	DEPTH OF CASING, DRILLING RATE DRILLING FLUID LOSS TESTS AND INSTRUMENTATION
					LOAM, brown, slightly moist to dry, very fine sand	Soil Classified based on SCS classification system Boring logged from cuttings
5.0						
					LOAM, similar to above, very moist	Driller notes change at approximately 8.0 feet
10.0						
15.0					LOAM, brown, wet, very fine sand	
20.0					SANDY LOAM, gray, wet, fine sand, fines decrease with depth	
						Driller notes change at approximately 22-23 feet
					SAND WITH GRAVEL, multi colored, wet, maximum paricle size ~1½"	
25.0					TOTAL DEPTH = 25.0 FEET	Well screened from 10.0 to 25.0 feet Sand pack to 8.0 feet bgs Bentonite seal to 7.0 feet bgs Grout to surface

CH2M HILL

PROJECT NUMBER	BORING NUMBER
SF035901.GW.ZZ	CH-10 SHEET 1 OF 1

SOIL BORING LOG

PROJECT Coyote Creek Revegitation **LOCATION** Site 6

ELEVATION Not Measured **DRILLING CONTRACTOR** Exploration Geoservices

DRILLING METHOD AND EQUIPMENT Truck mounted B-56 with 8"O.D. hollow stem augers

WATER LEVELS Not Measured **START** 9/27/93 **FINISH** 9/27/93 **LOGGER** A Demorest

DEPTH BELOW SURFACE (FT)	SAMPLE			STANDARD PENETRATION TEST RESULTS	SOIL DESCRIPTION	COMMENTS
	INTERVAL	NUMBER AND TYPE	RECOVERY	6"-6"-6" (N)	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	DEPTH OF CASING, DRILLING RATE DRILLING FLUID LOSS TESTS AND INSTRUMENTATION
					LOAM, brown, slightly moist to dry, very fine sand	Soil Classified based on SCS classification system Boring logged from cuttings
						Driller notes color change at approximately 4 feet
5.0					LOAM, dark brown, slightly moist, very fine sand, siltier than above	
					LOAM, similar to above, moist	
10.0						
					SANDY LOAM, brown, wet, very fine sand	Driller notes change at approximately 14.0 feet
15.0						
20.0						
					SILTY CLAY LOAM and SAND WITH GRAVEL, blue-gray, wet, well graded sand, maximum paricle size ~2" (interbedded)	Driller notes change at approximately 24 feet
25.0					TOTAL DEPTH = 25.0 FEET	
						Well screened from 10.0 to 25.0 feet Sand pack to 8.0 feet bgs Bentonite seal to 7.0 feet bgs Grout to surface

PROJECT NUMBER SF035901.GW.ZZ	**BORING NUMBER** CH-11 SHEET 1 OF 1

SOIL BORING LOG

PROJECT Coyote Creek Revegitation **LOCATION** Site 7
ELEVATION Not Measured **DRILLING CONTRACTOR** Exploration Geoservices
DRILLING METHOD AND EQUIPMENT Truck mounted B-56 with 8"O.D. hollow stem augers
WATER LEVELS Not Encountered **START** 10/13/93 **FINISH** 10/13/93 **LOGGER** A Demorest

DEPTH BELOW SURFACE (FT)	SAMPLE			STANDARD PENETRATION TEST RESULTS	SOIL DESCRIPTION	COMMENTS
	INTERVAL	NUMBER AND TYPE	RECOVERY	6" -6" -6" (N)	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	DEPTH OF CASING, DRILLING RATE DRILLING FLUID LOSS TESTS AND INSTRUMENTATION
						Soil Classified based on SCS classification system
	2.0 3.0	B-1	-		SILT LOAM, brown, slightly moist, very fine sand	2" ID split spoon sampler
5.0						
	7.5 9.0	S-2	1.3	6-8-14 (22)	SILT LOAM, brown, slightly moist, stiff, very fine sand	
10.0						
15.0	14.0 15.5	S-3	1.3	8-20-31 (>50)	CLAY, brown with gray and light brown mottling, moist, hard, $CaCO_3$ nodules, some small root channels	Driller notes clay at approximately 14.0 feet
					CLAY, similar to above	
20.0						
	24.0 25.0	B-4	-		CLAY, brown with light gray and rust mottling, moist, stiff to very stiff, sandier than above	Driller notes change at approximately 23 feet
25.0					TOTAL DEPTH = 25.0 FEET	Well screened from 10.0 to 25.0 feet Sand pack to 8.0 feet bgs Bentonite seal to 7.0 feet bgs Grout to surface

CH2M HILL

PROJECT NUMBER	BORING NUMBER
SF035901.GW.ZZ	CH-12 SHEET 1 OF 1

SOIL BORING LOG

PROJECT Coyote Creek Revegitation **LOCATION** Site 7

ELEVATION Not Measured **DRILLING CONTRACTOR** Exploration Geoservices

DRILLING METHOD AND EQUIPMENT Truck mounted B-56 with 8"O.D. hollow stem augers

WATER LEVELS Not Encountered **START** 10/13/93 **FINISH** 10/13/93 **LOGGER** A Demorest

DEPTH BELOW SURFACE (FT)	SAMPLE			STANDARD PENETRATION TEST RESULTS	SOIL DESCRIPTION	COMMENTS
	INTERVAL	NUMBER AND TYPE	RECOVERY	6"-6"-6" (N)	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	DEPTH OF CASING, DRILLING RATE DRILLING FLUID LOSS TESTS AND INSTRUMENTATION
						Soil Classified based on SCS classification system
	2.0 3.0	B-1	-		LOAM, brown, slightly moist, very fine sand	2" ID split spoon sampler
5.0						
	7.5 9.0	S-2	1.4	6-7-11 (18)	SILT LOAM, dark brown with dark gray mottling, moist, stiff, very fine sand	
10.0						
15.0	15.0 16.5	S-3	1.5	12-18-38 (>50)	CLAY, brown with gray and dark gray mottling, moist, hard, $CaCO_3$ deposits, some root channels	Driller notes change at approximately 15.0 feet
20.0					TOTAL DEPTH = 20.0 FEET	Well screened from 10.0 to 20.0 feet Sand pack to 8.0 feet bgs Bentonite seal to 7.0 feet bgs Grout to surface
25.0						

CH2M HILL

PROJECT NUMBER	BORING NUMBER
SF035901.GW.ZZ	CH-13 SHEET 1 OF 1

SOIL BORING LOG

PROJECT Coyote Creek Revegitation **LOCATION** Site 8

ELEVATION Not Measured **DRILLING CONTRACTOR** Exploration Geoservices

DRILLING METHOD AND EQUIPMENT Truck mounted B-56 with 8"O.D. hollow stem augers

WATER LEVELS Not Measured **START** 10/13/93 **FINISH** 10/13/93 **LOGGER** A Demorest

DEPTH BELOW SURFACE (FT)	SAMPLE			STANDARD PENETRATION TEST RESULTS	SOIL DESCRIPTION	COMMENTS
	INTERVAL	NUMBER AND TYPE	RECOVERY	6"-6"-6" (N)	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	DEPTH OF CASING, DRILLING RATE DRILLING FLUID LOSS TESTS AND INSTRUMENTATION
						Soil Classified based on SCS classification system
	2.0 3.0	B-1	-		SANDY LOAM, brown, slightly moist, very fine sand	2" ID split spoon sampler
5.0						
	7.5 9.0	S-2	1.5	7-8-10 (18)	Top 4": LOAM, brown, moist, stiff, very fine sand, 1" gravel lens Bottom: SAND, dark gray-brown, moist, medium consistency, poorly graded fine to very fine sand.	
10.0						
15.0					SAND, multicolored, wet, well graded, some gravel, ½" max. particle size	
20.0						
					CLAY, brown with gray mottling, moist, very stiff	Driller notes change at approximately 23.0 feet
25.0					TOTAL DEPTH = 25.0 FEET	Well screened from 10.0 to 25.0 feet Sand pack to 8.0 feet bgs Bentonite seal to 7.0 feet bgs Grout to surface

CH2M HILL

PROJECT NUMBER	BORING NUMBER
SF035901.GW.ZZ	CH-15 SHEET 1 OF 1

SOIL BORING LOG

PROJECT Coyote Creek Revegitation **LOCATION** Site 6

ELEVATION Not Measured **DRILLING CONTRACTOR** Exploration Geoservices

DRILLING METHOD AND EQUIPMENT Truck mounted B-56 with 8"O.D. hollow stem augers

WATER LEVELS Not Encountered **START** 10/13/93 **FINISH** 10/13/93 **LOGGER** A Demorest

DEPTH BELOW SURFACE (FT)	SAMPLE			STANDARD PENETRATION TEST RESULTS	SOIL DESCRIPTION	COMMENTS
	INTERVAL	NUMBER AND TYPE	RECOVERY	6"-6"-6" (N)	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	DEPTH OF CASING, DRILLING RATE DRILLING FLUID LOSS TESTS AND INSTRUMENTATION
	0.0 1.5	S-1	1.2	20-20-17 (37)	LOAM, light brown, dry, very stiff, very fine sand	Soil Classified based on SCS classification system 2" ID split spoon sampler
5.0						
	6.0 7.5	S-2	1.5	6-10-12 (22)	LOAM, brown, moist, stiff, very fine sand	
10.0						
	12.0 13.0	B-3	-		CLAY, dark brown, moist, stiff to very stiff	Driller notes change at approximately 12.0 feet
15.0						
20.0					TOTAL DEPTH = 20.0 FEET	Well screened from 10.0 to 20.0 feet Sand pack to 8.0 feet bgs Bentonite seal to 7.0 feet bgs Grout to surface
25.0						

Appendix B

Laboratory Data Sheets

PORT NUMBER

94-139-028

A & L WESTERN AGRICULTURAL LABORATORIES

1311 Woodland Ave. • Ste. #1 • Modesto, CA 95351 • (209) 529-4080 • FAX (209) 529-4736

Client No: 2717

SEND TO:
CHROMALAB, INC.
2239 OMEGA ROAD, #1
SAN RAMON, CA 94583-

GROWER: 16462

SAMPLES SUBMITTED BY: ERIC TAM

SOIL ANALYSIS REPORT

(SEE EXPLANATION ON BACK)

TE OF REPORT 05/23/94 PAGE 1

SAMPLE NUMBER	LAB NUMBER	ORGANIC MATTER % * RATE	ORGANIC MATTER ** ENR lbs./A	PHOSPHORUS P1 (Weak Bray) * **** ppm-P RATE	PHOSPHORUS P2 NaHCO3-P * **** ppm-P RATE	POTASSIUM K * ***** ppm-K RATE	MAGNESIUM Mg * *** ppm-Mg RATE	CALCIUM Ca * *** ppm-Ca RATE	SODIUM Na * *** ppm-Na RATE	pH SOIL pH	pH BUFFER INDEX	HYDROGEN H meq/100g	Cation Exchange Capacity C.E.C. meq/100g	PERCENT BASE SATURATION (COMPUTED) % K	% Mg	% Ca	% H	% Na
CH-1S	55641	0.9L	48	16L	29VH	178H	426VH	243VL	31L	7.5		0.0	5.3	8.6	66.0	22.9	0.0	2.5
CH-1D	55642	1.6L	62	5VL	20H	121L	561VH	1890M	344H	6.9		0.2	16.1	1.9	28.7	58.6	1.5	9.3
CH-2S	55643	1.0L	50	22M	20H	128M	461VH	1950H	47L	6.9		0.2	14.3	2.3	26.6	68.2	1.5	1.4
CH-2D	55644	1.1L	52	5VL	12M	164L	1670VH	2600L	238L	7.2		0.0	28.2	1.5	48.8	46.1	0.0	3.7

SAMPLE NUMBER	NITRATE NO3 ppm-NO3-N RATE	SULFUR S ppm-S RATE	ZINC Zn ppm-Zn RATE	MANGANESE Mn ppm-Mn RATE	IRON Fe ppm-Fe RATE	COPPER Cu ppm-Cu Rate	BORON B ppm-B RATE	EXCESS LIME RATE	SOLUBLE SALTS mmhos/cm RATE	CHLORIDE Cl ppm-Cl RATE
CH-1S	3VL	1VL	1.5M	6L	27VH	3.6VH	1.8H	M	0.4L	51VL
CH-1D	1VL	61VH	2.8M	46VH	146VH	6.1VH	1.4H	L	2.6H	150L
CH-2S	6L	11M	1.2M	10M	25H	3.1VH	1.4H	L	0.7M	98L
CH-2D	1VL	14M	0.8L	7L	26VH	3.8VH	1.2M	L	0.8M	69VL

PARTICLE SIZE ANALYSIS

% SAND	% SILT	% CLAY	SOIL TEXTURE
37	34	29	CLAY LOAM
49	26	25	SANDY CLAY LOAM
37	36	27	LOAM
15	28	57	CLAY

This report applies only to the sample(s) tested. Samples are retained a maximum of thirty days after testing.

By MIKE BUTTRESS, CPAg

* CODE TO RATING: VERY LOW (VL), LOW (L), MEDIUM (M), HIGH (H), VERY HIGH (VH), AND NONE (N).
** ENR - ESTIMATED NITROGEN RELEASE
MULTIPLY THE RESULTS IN ppm BY 2 TO CONVERT TO LBS. PER ACRE OF THE ELEMENTAL FORM

**** MULTIPLY THE RESULTS IN ppm BY 4.6 TO CONVERT TO LBS. PER ACRE P_2O_5
***** MULTIPLY THE RESULTS IN ppm BY 2.4 TO CONVERT TO LBS. PER ACRE K_2O
MOST SOILS WEIGH TWO (2) MILLION POUNDS (DRY WEIGHT) FOR AN ACRE OF SOIL 6-2/3 INCHES DEEP

EPORT NUMBER
93-334-016

A & L WESTERN AGRICULTURAL LABORATORIES

1311 Woodland Ave. • Ste. #1 • Modesto, CA 95351 • (209) 529-4080 • FAX (209) 529-4736

SEND TO:
CHROMALAB
2239 OMEGA ROAD #1
SAN RAMON
CA
94583

GROWER 9311303

SAMPLES SUBMITTED BY: ERIC TAM

ATE OF REPORT 12-03-93

PAGE 1

SOIL ANALYSIS REPORT

(SEE EXPLANATION ON BACK)

SAMPLE NUMBER	LAB NUMBER	ORGANIC MATTER % * RATE	ORGANIC MATTER ** ENR lbs./A	PHOSPHORUS P_1 (Weak Bray) **** ppm-P RATE	PHOSPHORUS P_2 $NaHCO_3$-P **** ppm-P RATE	POTASSIUM K ***** ppm-K RATE	MAGNESIUM Mg * *** ppm-Mg RATE	CALCIUM Ca * *** ppm-Ca RATE	SODIUM Na * *** ppm-Na RATE	pH SOIL pH	pH BUFFER INDEX	HYDROGEN H meq/100g	Cation Exchange Capacity C.E.C. meq/100g	PERCENT BASE SATURATION (COMPUTED) % K	% Mg	% Ca	% H	% Na
SS-14	54649	0.9VL	48	39VH	32H	488VH	293 VH	1210M	37L	7.3		0.0	9.9	12.6	24.7	61.1	0.0	1.6
SS-15	54650	0.9VL	48	18M	12L	260VH	294 VH	1250M	34L	7.3		0.0	9.5	7.0	25.8	65.7	0.0	1.6
SS-7	54651	1.0VL	50	43VH	41H	250VH	406 VH	1490M	35L	7.1		0.0	11.6	5.5	29.1	64.1	0.0	1.3
11759	54652	0.7VL	44	3VL	4VL	60VL	966 VH	1400L	179VH	7.5		0.0	16.0	1.0	50.4	43.8	0.0	4.9
13759	54653	0.5VL	40	5VL	8L	53VL	571 VH	960L	67M	7.7		0.0	10.0	1.4	47.7	48.1	0.0	2.9

SAMPLE NUMBER	NITRATE NO_3 ppm-NO_3-N RATE	SULFUR S ppm-S RATE	ZINC Zn ppm-Zn RATE	MANGANESE Mn ppm-Mn RATE	IRON Fe ppm-Fe RATE	COPPER Cu ppm-Cu Rate	BORON B ppm-B RATE	EXCESS LIME RATE	SOLUBLE SALTS mmhos/cm RATE	CHLORIDE Cl ppm-Cl RATE	MOLYBDENUM Mo ppm-Mo RATE	PARTICLE SIZE ANALYSIS % SAND	% SILT	% CLAY	SOIL TEXTURE
SS-14	5L							L	0.5 L	44 L		36	47	17	LOAM
SS-15	17M							L	0.7 L	26 L		52	31	17	SANDY LOAM
SS-7	20M							M	0.5 L	35 L		26	51	23	SILT LOAM
11759	29H							M	2.1 M	257 H		16	57	27	SILT LOAM
13759	9L							L	0.7 L	44 L		78	15	7	LOAMY SAND

This report applies only to the sample(s) tested. Samples are retained a maximum of thirty days after testing.

By MIKE BUTTRESS

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MULTIPLY THE RESULTS IN BY 2 TO CONVERT TO LBS. PER ACRE OF THE ELEMENTAL FORM

**** MULTIPLY THE RESULTS IN ppm BY 4.6 TO CONVERT TO LBS. PER ACRE P_2O_5

***** MULTIPLY THE RESULTS IN ppm BY 2.4 TO CONVERT TO LBS. PER ACRE K_2O

MOST SOILS WEIGH TWO (2) MILLION POUNDS (DRY WEIGHT) FOR AN ACRE OF SOIL 6-2/3 INCHES DEEP

EPORT NUMBER
93-334-016

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SAN RAMON
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94583

GROWER 9311303

SAMPLES SUBMITTED BY: ERIC TAM

ATE OF REPORT 12-03-93

PAGE 3

SOIL ANALYSIS REPORT

(SEE EXPLANATION ON BACK)

SAMPLE NUMBER	LAB NUMBER	ORGANIC MATTER % * RATE	ORGANIC MATTER ** ENR lbs./A	PHOSPHORUS P1 (Weak Bray) * **** ppm-P RATE	PHOSPHORUS P2 NaHCO3-P * **** ppm-P RATE	POTASSIUM K * ***** ppm-K RATE	MAGNESIUM Mg * *** ppm-Mg RATE	CALCIUM Ca * *** ppm-Ca RATE	SODIUM Na * *** ppm-Na RATE	pH SOIL pH	pH BUFFER INDEX	HYDRO-GEN H meq/100g	Cation Exchange Capacity C.E.C. meq/100g	PERCENT BASE SATURATION (COMPUTED) % K	% Mg	% Ca	% H	% Na
B5759	54659	0.7VL	44	3VL	3VL	63L	756 VH	1200L	227VH	7.7		0.0	13.4	1.2	46.8	44.6	0.0	7.3
SS-1	54660	2.0M	70	33VH	28H	407VH	387 VH	1690M	27VL	7.2		0.0	12.8	8.1	25.1	65.8	0.0	0.9
SS-2	54661	0.8VL	46	16M	10L	96M	369 VH	1230M	53L	7.4		0.0	9.7	2.5	31.7	63.4	0.0	2.4
SS-3	54662	0.9VL	48	21H	13L	98M	409 VH	1460M	46L	7.6		0.0	11.2	2.3	30.5	65.4	0.0	1.8
SS-4	54663	1.0VL	50	25H	20M	153H	380 VH	1380M	57M	7.8		0.0	10.7	3.7	29.6	64.4	0.0	2.3

SAMPLE NUMBER	NITRATE NO3 ppm-NO3-N RATE	SULFUR S ppm-S RATE	ZINC Zn ppm-Zn RATE	MANGA-NESE Mn ppm-Mn RATE	IRON Fe ppm-Fe RATE	COPPER Cu ppm-Cu Rate	BORON B ppm-B RATE	EXCESS LIME RATE	SOLUBLE SALTS mmhos/cm RATE	CHLORIDE Cl ppm-Cl RATE	MOLYB-DENUM Mo ppm-Mo RATE	PARTICLE SIZE ANALYSIS % SAND	% SILT	% CLAY	SOIL TEXTURE
B5759	47VH							M	1.2 L	115 M		46	39	15	LOAM
SS-1	29H							L	0.7 L	27 L		48	37	15	LOAM
SS-2	8L							L	0.4 L	27 L		42	43	15	LOAM
SS-3	6L							L	0.3 L	27 L		36	41	23	LOAM
SS-4	7L							L	0.5 L	27 L		38	41	21	LOAM

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By MIKE BUTTRESS

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DATE OF REPORT 12-03-93

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SOIL ANALYSIS REPORT

(SEE EXPLANATION ON BACK)

SAMPLE NUMBER	LAB NUMBER	ORGANIC MATTER % * RATE	ORGANIC MATTER ** ENR lbs./A	PHOSPHORUS P1 (Weak Bray) * **** ppm-P RATE	PHOSPHORUS P2 NaHCO3-P * **** ppm-P RATE	POTASSIUM K * ***** ppm-K RATE	MAGNESIUM Mg * *** ppm-Mg RATE	CALCIUM Ca * *** ppm-Ca RATE	SODIUM Na * *** ppm-Na RATE	pH SOIL pH	pH BUFFER INDEX	HYDRO-GEN H meq/100g	Cation Exchange Capacity C.E.C. meq/100g	PERCENT BASE SATURATION (COMPUTED) % K	% Mg	% Ca	% H	% Na
SS-5	54664	1.0VL	50	29H	21M	212VH	368 VH	1210M	40L	7.5		0.0	9.8	5.5	31.2	61.5	0.0	1.8
SS-6	54665	0.9VL	48	28H	18M	146H	421 VH	1370M	47L	7.6		0.0	10.9	3.4	32.1	62.6	0.0	1.9
SS-8	54666	0.9VL	48	25H	30H	161VH	368 VH	1200M	72M	7.6		0.0	9.8	4.2	31.3	61.3	0.0	3.2
SS-9	54667	1.2L	54	23H	17M	229VH	339 VH	1420M	33VL	7.3		0.0	10.7	5.5	26.5	66.6	0.0	1.3
SS-10	54668	1.4L	58	19M	18M	260VH	340 VH	1230M	45L	6.5		0.7	10.6	6.3	26.6	57.8	7.5	1.8

SAMPLE NUMBER	NITRATE NO3 ppm-NO3-N RATE	SULFUR S ppm-S RATE	ZINC Zn ppm-Zn RATE	MANGA-NESE Mn ppm-Mn RATE	IRON Fe ppm-Fe RATE	COPPER Cu ppm-Cu Rate	BORON B ppm-B RATE	EXCESS LIME RATE	SOLUBLE SALTS mmhos/cm RATE	CHLORIDE Cl ppm-Cl RATE	MOLYB-DENUM Mo ppm-Mo RATE
SS-5	8L							L	0.4 L	27 L	
SS-6	16M							L	0.4 L	27 L	
SS-8	38H							L	0.6 L	18 L	
SS-9	29H							M	0.7 L	35 L	
SS-10	63VH							M	0.9 L	9 L	

PARTICLE SIZE ANALYSIS

% SAND	% SILT	% CLAY	SOIL TEXTURE
28	49	23	LOAM
28	51	21	SILT LOAM
34	43	23	LOAM
36	47	17	LOAM
26	47	27	LOAM

This report applies only to the sample(s) tested. Samples are retained a maximum of thirty days after testing.

By MIKE BUTTRESS

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MOST SOILS WEIGH TWO (2) MILLION POUNDS (DRY WEIGHT) FOR AN ACRE OF SOIL 6-2/3 INCHES DEEP

REPORT NUMBER
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SAMPLES SUBMITTED BY: ERIC TAM

DATE OF REPORT 12-03-93 **PAGE** 5

SOIL ANALYSIS REPORT

(SEE EXPLANATION ON BACK)

SAMPLE NUMBER	LAB NUMBER	ORGANIC MATTER % * RATE	ORGANIC MATTER ** ENR lbs./A	PHOSPHORUS P1 (Weak Bray) * **** ppm-P RATE	PHOSPHORUS P2 NaHCO3-P * **** ppm-P RATE	POTASSIUM K * ***** ppm-K RATE	MAGNESIUM Mg * *** ppm-Mg RATE	CALCIUM Ca * *** ppm-Ca RATE	SODIUM Na * *** ppm-Na RATE	pH SOIL pH	pH BUFFER INDEX	HYDROGEN H meq/100g	Cation Exchange Capacity C.E.C. meq/100g	PERCENT BASE SATURATION (COMPUTED) % K	% Mg	% Ca	% H	% Na
SS-11	54669	1.0VL	50	67VH	36H	361VH	273 VH	1280M	35L	7.3		0.0	9.8	9.5	23.3	65.6	0.0	1.6
SS-13	54670	1.1L	52	77VH	49VH	449VH	250 VH	1220M	23VL	7.3		0.0	9.4	12.2	22.1	64.7	0.0	1.1
S1323	54671	0.6VL	42	6L	5VL	80L	256 VH	1360H	28VL	7.7		0.0	9.3	2.2	23.0	73.4	0.0	1.3
B1759	54672	1.0VL	50	2VL	5VL	72L	556 VH	1630M	174VH	7.3		0.0	13.7	1.3	33.8	59.4	0.0	5.5
B-115	54673	0.9VL	48	2VL	13L	146M	801 VH	2160M	197VH	7.9		0.0	18.7	2.0	35.7	57.7	0.0	4.6

SAMPLE NUMBER	NITRATE NO3 ppm-NO3-N RATE	SULFUR S ppm-S RATE	ZINC Zn ppm-Zn RATE	MANGANESE Mn ppm-Mn RATE	IRON Fe ppm-Fe RATE	COPPER Cu ppm-Cu Rate	BORON B ppm-B RATE	EXCESS LIME RATE	SOLUBLE SALTS mmhos/cm RATE	CHLORIDE Cl ppm-Cl RATE	MOLYBDENUM Mo ppm-Mo RATE
SS-11	10L							L	0.5 L	18 L	
SS-13	10L							L	0.4 L	9 L	
S1323	4L							M	0.3 L	9 L	
B1759	7L							M	1.5 L	328 H	
B-115	6L							H	0.5 L	53 L	

PARTICLE SIZE ANALYSIS

% SAND	% SILT	% CLAY	SOIL TEXTURE
26	41	33	CLAY LOAM
38	41	21	LOAM
58	33	9	SANDY LOAM
13	49	38	SILTY CLAY LOAM
16	41	43	SILTY CLAY

This report applies only to the sample(s) tested. Samples are retained a maximum of thirty days after testing.

By MIKE BUTTRESS

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IEPORT NUMBER
93-334-016

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SAMPLES SUBMITTED BY: ERIC TAM

ATE OF REPORT 12-03-93

PAGE 6

SOIL ANALYSIS REPORT

(SEE EXPLANATION ON BACK)

SAMPLE NUMBER	LAB NUMBER	ORGANIC MATTER		PHOSPHORUS		POTASSIUM	MAGNESIUM	CALCIUM	SODIUM	pH		HYDRO-GEN	Cation Exchange Capacity	PERCENT BASE SATURATION (COMPUTED)				
		% * RATE	** ENR lbs./A	P1 (Weak Bray) * **** ppm-P RATE	P2 NaHCO3-P * **** ppm-P RATE	K * ***** ppm-K RATE	Mg * *** ppm-Mg RATE	Ca * *** ppm-Ca RATE	Na * *** ppm-Na RATE	SOIL pH	BUFFER INDEX	H meq/100g	C.E.C. meq/100g	% K	% Mg	% Ca	% H	% Na
B2759	54674	0.6VL	42	3VL	5VL	37VL	419 VH	1340M	186VH	8.1		0.0	11.1	0.9	31.5	60.4	0.0	7.3
B3759	54675	0.8VL	46	5VL	8L	405VH	546 VH	1380M	80H	7.9		0.0	12.8	8.1	35.4	53.8	0.0	2.7
B3-15	54676	0.7VL	44	4VL	9L	156M	710 VH	1760M	216VH	8.0		0.0	16.1	2.5	36.9	54.8	0.0	5.8
B6759	54677	1.0VL	50	1VL	9L	42VL	586 VH	1460M	153VH	7.7		0.0	13.0	0.8	37.7	56.3	0.0	5.1
12759	54678	0.9VL	48	1VL	5VL	60VL	584 VH	1360M	229VH	7.9		0.0	12.8	1.2	38.0	53.1	0.0	7.8

SAMPLE NUMBER	NITRATE NO3 ppm-NO3-N RATE	SULFUR S ppm-S RATE	ZINC Zn ppm-Zn RATE	MANGA-NESE Mn ppm-Mn RATE	IRON Fe ppm-Fe RATE	COPPER Cu ppm-Cu Rate	BORON B ppm-B RATE	EXCESS LIME RATE	SOLUBLE SALTS mmhos/cm RATE	CHLORIDE Cl ppm-Cl RATE	MOLYB-DENUM Mo ppm-Mo RATE	PARTICLE SIZE ANALYSIS % SAND	% SILT	% CLAY	SOIL TEXTURE
B2759	20M							H	0.6 L	27 L		32	43	25	LOAM
B3759	6L							H	0.5 L	27 L		14	51	35	SILTY CLAY LOAM
B3-15	7L							H	0.6 L	80 M		26	44	30	CLAY LOAM
B6759	4L							M	0.8 L	115 M		18	51	31	SILTY CLAY LOAM
12759	7L							M	0.5 L	44 L		13	66	21	SILT LOAM

This report applies only to the sample(s) tested. Samples are retained a maximum of thirty days after testing.

By MIKE BUTTRESS

* CODE TO RATING: VERY LOW (VL), LOW (L), MEDIUM (M), HIGH (H), VERY HIGH (VH), AND NONE (N).
** ENR - ESTIMATED NITROGEN RELEASE
**** MULTIPLY THE RESULTS IN ppm BY 4.6 TO CONVERT TO LBS. PER ACRE P_2O_5
***** MULTIPLY THE RESULTS IN ppm BY 2.4 TO CONVERT TO LBS. PER ACRE K_2O

IEPORT NUMBER
93-334-016

A & L WESTERN AGRICULTURAL LABORATORIES

1311 Woodland Ave. • Ste. #1 • Modesto, CA 95351 • (209) 529-4080 • FAX (209) 529-4736

SEND TO:
CHROMALAB
2239 OMEGA ROAD #1
SAN RAMON
CA
94583

GROWER 9311303

SAMPLES SUBMITTED BY: ERIC TAM

ATE OF REPORT 12-03-93

PAGE 7

SOIL ANALYSIS REPORT

(SEE EXPLANATION ON BACK)

SAMPLE NUMBER	LAB NUMBER	ORGANIC MATTER % * RATE	ORGANIC MATTER ** ENR lbs./A	PHOSPHORUS P1 (Weak Bray) * **** ppm-P RATE	PHOSPHORUS P2 NaHCO3-P * **** ppm-P RATE	POTASSIUM K * ***** ppm-K RATE	MAGNESIUM Mg * *** ppm-Mg RATE	CALCIUM Ca * *** ppm-Ca RATE	SODIUM Na * *** ppm-Na RATE	pH SOIL pH	pH BUFFER INDEX	HYDRO-GEN H meq/100g	Cation Exchange Capacity C.E.C. meq/100g	PERCENT BASE SATURATION (COMPUTED) % K	% Mg	% Ca	% H	% Na
21565	54679	0.8VL	46	2VL	5VL	120L	1080 VH	2210M	278VH	7.4		0.0	21.6	1.4	41.7	51.2	0.0	5.6
B2-23	54680	1.4L	58	15M	19M	236VH	386 VH	1480M	55L	7.5		0.0	11.5	5.3	28.1	64.6	0.0	2.1
C1123	54681	1.1L	52	5VL	224VH	71L	446 VH	1370M	384VH	8.1		0.0	12.4	1.5	29.9	55.2	0.0	13.4
B1423	54682	0.7VL	44	9L	14L	142H	417 VH	1400M	156VH	7.7		0.0	11.5	3.2	30.2	60.8	0.0	5.9

SAMPLE NUMBER	NITRATE NO3 ppm-NO3-N RATE	SULFUR S ppm-S RATE	ZINC Zn ppm-Zn RATE	MANGA-NESE Mn ppm-Mn RATE	IRON Fe ppm-Fe RATE	COPPER Cu ppm-Cu Rate	BORON B ppm-B RATE	EXCESS LIME RATE	SOLUBLE SALTS mmhos/cm RATE	CHLORIDE Cl ppm-Cl RATE	MOLYB-DENUM Mo ppm-Mo RATE
21565	2VL							M	0.5 L	53 L	
B2-23	21H							L	0.6 L	27 L	
C1123	4L							L	0.7 L	80 M	
B1423	11M							L	0.4 L	27 L	

PARTICLE SIZE ANALYSIS

% SAND	% SILT	% CLAY	SOIL TEXTURE
26	11	63	CLAY
36	39	25	LOAM
22	51	27	SILT LOAM
40	45	15	LOAM

This report applies only to the sample(s) tested. Samples are retained a maximum of thirty days after testing.

By MIKE BUTTRESS

* CODE TO RATING: VERY LOW (VL), LOW (L), MEDIUM (M), HIGH (H), VERY HIGH (VH), AND NONE (N).

** ENR - ESTIMATED NITROGEN RELEASE

**** MULTIPLY THE RESULTS IN ppm BY 4.6 TO CONVERT TO LBS. PER ACRE P_2O_5

***** MULTIPLY THE RESULTS IN ppm BY 2.4 TO CONVERT TO LBS. PER ACRE K_2O

EPORT NUMBER
93-334-016

A & L WESTERN AGRICULTURAL LABORATORIES

1311 Woodland Ave. • Ste. #1 • Modesto, CA 95351 • (209) 529-4080 • FAX (209) 529-4736

SEND TO:
CHROMALAB
2239 OMEGA ROAD #1
SAN RAMON
CA
94583

GROWER 9311303

SAMPLES SUBMITTED BY: ERIC TAM

ATE OF REPORT 12-03-93

PAGE 2

SOIL ANALYSIS REPORT

(SEE EXPLANATION ON BACK)

SAMPLE NUMBER	LAB NUMBER	ORGANIC MATTER % * RATE	ORGANIC MATTER ** ENR lbs./A	PHOSPHORUS P1 (Weak Bray) * **** ppm-P RATE	PHOSPHORUS P2 NaHCO3-P * **** ppm-P RATE	POTASSIUM K * ***** ppm-K RATE	MAGNESIUM Mg * *** ppm-Mg RATE	CALCIUM Ca * *** ppm-Ca RATE	SODIUM Na * *** ppm-Na RATE	pH SOIL pH	pH BUFFER INDEX	HYDROGEN H meq/100g	Cation Exchange Capacity C.E.C. meq/100g	PERCENT BASE SATURATION (COMPUTED) % K	% Mg	% Ca	% H	% Na
15675	54654	1.0VL	50	11L	13L	59VL	438 VH	1820M	184VH	7.0		0.0	13.7	1.1	26.6	66.4	0.0	5.8
C1515	54655	1.2L	54	6L	11L	127L	1330 VH	1800L	768VH	7.9		0.0	23.7	1.4	46.7	37.9	0.0	14.1
14155	54656	0.8VL	46	3VL	.4VL	97VL	1962 VH	1640L	321VH	8.0		0.0	26.2	0.9	62.4	31.3	0.0	5.3
B9105	54657	0.5VL	40	2VL	3VL	51VL	952 VH	1200L	196VH	7.9		0.0	14.9	0.9	53.2	40.2	0.0	5.7
61213	54658	1.7L	64	26H	17M	383VH	566 VH	1840M	53L	7.3		0.0	15.1	6.5	31.2	60.8	0.0	1.5

SAMPLE NUMBER	NITRATE NO3 ppm-NO3-N RATE	SULFUR S ppm-S RATE	ZINC Zn ppm-Zn RATE	MANGANESE Mn ppm-Mn RATE	IRON Fe ppm-Fe RATE	COPPER Cu ppm-Cu Rate	BORON B ppm-B RATE	EXCESS LIME RATE	SOLUBLE SALTS mmhos/cm RATE	CHLORIDE Cl ppm-Cl RATE	MOLYBDENUM Mo ppm-Mo RATE	PARTICLE SIZE ANALYSIS % SAND	% SILT	% CLAY	SOIL TEXTURE
15675	19M							H	1.4 L	93 M		30	47	23	LOAM
												22	27	51	CLAY
C1515	21H							H	0.8 L	53 L		14	29	57	CLAY
14155	6L							M	1.2 L	141 M		36	37	27	LOAM
B9105	18M							M	1.0 L	106 M					
61213	18M							L	0.6 L	27 L					

This report applies only to the sample(s) tested. Samples are retained a maximum of thirty days after testing.

By MIKE BUTTRESS

- * CODE TO RATING: VERY LOW (VL), LOW (L), MEDIUM (M), HIGH (H), VERY HIGH (VH), AND NONE (N).
- ** ENR - ESTIMATED NITROGEN RELEASE
- **** MULTIPLY THE RESULTS IN ppm BY 4.6 TO CONVERT TO LBS. PER ACRE P_2O_5
- ***** MULTIPLY THE RESULTS IN ppm BY 2.4 TO CONVERT TO LBS. PER ACRE K_2O

Appendix C
Chain of Custody Forms

CH2M HILL
QUALITY ANALYTICAL LABORATORIES

CHAIN OF CUSTODY RECORD AND AGREEMENT TO PERFORM SERVICES

CH2M HILL Project # BAW35901.GW.ZZ

Purchase Order #

Project Name Coyote Creek, Reach 3

Company Name/CH2M HILL Office SFO

Project Manager & Phone # (510) 251-2426
Mr. ☐
Ms. ☒
Dr. ☐ Lynne Hosley

Report Copy to: Ana Demorest

Requested Completion Date:

Sampling Requirements
SDWA ☐ NPDES ☐ RCRA ☐ OTHER ____

Sample Disposal:
Dispose ☒ Return ☐

LAB TEST CODES

ANALYSES REQUESTED

Sampling Date	Sampling Time	Type COMP	Type GRAB	Matrix WATER	Matrix SOIL	CLIENT SAMPLE ID (9 CHARACTERS)	# OF CONTAINERS	Ag Package	Chloride	Soil Texture	REMARKS	LAB 1 ID	LAB 2 ID
5/4			X		X	CH-1S	3	X	X	X			
5/4			X		X	CH-1D	3	X	X	X			
5/4			X		X	CH-2S	3	X	X	X			
5/4			X		X	CH-2D	3	X	X	X			

SHADED AREA – FOR LAB USE ONLY

Lab 1 #
Lab 2 #
Quote #
Kit Request #
Project #
No. of Samples
Page
of
COC Rev
Login
LIMS Ver
Ack Gen

Sampled By & Title (Please sign and print name) Ana Demorest
Date/Time 5/4/94

Relinquished By (Please sign and print name) Ana Demorest
Date/Time 5/16

Received By (Please sign and print name) B. Moran
Date/Time 1:42 5-16-94

Relinquished By (Please sign and print name)
Date/Time

Received By (Please sign and print name)
Date/Time

Relinquished By (Please sign and print name)
Date/Time

Received By (Please sign and print name)
Date/Time

Shipped Via
UPS BUS Fed-Ex Hand Other____

Shipping #

HAZWRAP/NESSA: Y N

QC Level: 1 2 3 **Other:** ____

COC Rec	ICE
Ana Req	TEMP
Cust Seal	Ph

Work Authorized By (Please sign and print name) Ana C. Demorest

Remarks

Instructions and Agreement Provisions on Reverse Side

DISTRIBUTION: ORIGINAL - LAB, Yellow - LAB, Pink - Client order # 14241 4311303

CH2M HILL
QUALITY ANALYTICAL LABORATORIES

CHAIN OF CUSTODY RECORD AND AGREEMENT TO PERFORM SERVICES

CH2M HILL Project # SF035961.64ZZ

Purchase Order #

Project Name Coyote Creek, Reach 3

Company Name/CH2M HILL Office SFO

Project Manager & Phone # Mr. [ ] Ms. [✓] Dr. [ ] Lynne Hosley (510) 251-2426

Report Copy to: Ann Demorest

Requested Completion Date: 11/30/93

Sampling Requirements SDWA ☐ NPDES ☐ RCRA ☐ OTHER ____

Sample Disposal: Dispose ☒ Return ☐

LAB TEST CODES

ANALYSES REQUESTED

RUSH

SHADED AREA – FOR LAB USE ONLY

Lab 1 #
Lab 2 #
Quote #
Kit Request #
Project #
No. of Samples
Page
of
COC Rev
Login
LIMS Ver
Ack Gen

	Sampling Date	Sampling Time	Type COMP	Type GRAB	Matrix WATER	Matrix SOIL	CLIENT SAMPLE ID (9 CHARACTERS)	# OF CONTAINERS	Ag Package	Chloride	Soil Texture	REMARKS	LAB 1 ID	LAB 2 ID
✓				X		X	B-1 7.5-9		X	X	X			
✓							B-1 15							
✓							B-2 7.5-9							
✓							B-3 7.5-9							
							~~B-13 15~~					(No B13-15 but B3-15 shipped)		
✓							B-6 7.5-9							
✓							CH-12 7.5-9							
✓							CH-12 15-16.5							
✓							B-2 2-3							
✓							CH-11 2-3							
✓							B-14 2-3							

Sampled By & Title (Please sign and print name)	**Date/Time**	**Relinquished By** (Please sign and print name) Derrik Williams (Derrik Williams)	**Date/Time** 11/24	
Received By (Please sign and print name) Garret Farmer GARRET FARMER	**Date/Time** 11/24/93 14:55	**Relinquished By** (Please sign and print name) Garret Farmer GARRET FARMER	**Date/Time** 11/24/1620	
Received By (Please sign and print name)	**Date/Time**	**Relinquished By** (Please sign and print name)	**Date/Time**	
Received By (Please sign and print name) Jm Kelly	**Date/Time** 11/24/93 16:34	**Shipped Via** UPS BUS Fed-Ex Hand Other____	**Shipping #**	
Work Authorized By (Please sign and print name)	**Remarks**			

HAZWRAP/NESSA: Y N
QC Level: 1 2 3 Other: ____
COC Rec
ICE
Ana Req
TEMP
Cust Seal
Ph

Instructions and Agreement Provisions on Reverse Side

DISTRIBUTION: ORIGINAL - LAB, Yellow - LAB, Pink - Client
REV 11/92 FORM 340

Order 14241 4311303

CH2M HILL
QUALITY ANALYTICAL LABORATORIES

CHAIN OF CUSTODY RECORD AND AGREEMENT TO PERFORM SERVICES

CH2M HILL Project # SE035991.GW.ZZ

Purchase Order #

Project Name Coyote Creek, Reach 3

Company Name/CH2M HILL Office SFO

Project Manager & Phone # (510) 251-2426
Mr. [ ]
Ms. [x] Lynn Hosley
Dr. [ ]

Report Copy to: Ana Demorest

Requested Completion Date: 11/30/93

Sampling Requirements
SDWA ☐ NPDES ☐ RCRA ☐ OTHER ____

Sample Disposal:
Dispose ☒ Return ☐

LAB TEST CODES

ANALYSES REQUESTED

RUSH

SHADED AREA – FOR LAB USE ONLY
Lab 1 #
Lab 2 #
Quote #
Kit Request #
Project #
No. of Samples
Page
of
COC Rev
Login
LIMS Ver
Ack Gen

Sampling Date	Sampling Time	Type COMP	Type GRAB	Matrix WATER	Matrix SOIL	CLIENT SAMPLE ID (9 CHARACTERS)	# OF CONTAINERS	Ag Package	Chloride	Soil Texture	REMARKS	LAB 1 ID	LAB 2 ID
			X		X	CH-13 2-3		X	X	X			

Sampled By & Title (Please sign and print name)
Date/Time

Relinquished By (Please sign and print name) Derrik Williams (Derrik Williams)
Date/Time 11/24

Received By (Please sign and print name) Garret Farmer GARRET FARMER
Date/Time 11/24/93 14:55

Relinquished By (Please sign and print name) Garret Farmer GARRET FARMER
Date/Time 11/24 16:08

Received By (Please sign and print name)
Date/Time

Relinquished By (Please sign and print name)
Date/Time

Received By (Please sign and print name) Jack Kelly
Date/Time 11/24/93 16:34

Shipped Via
UPS BUS Fed-Ex Hand Other____

Shipping #

Work Authorized By (Please sign and print name)

Remarks

HAZWRAP/NESSA: Y N
QC Level: 1 2 3 Other: ____
COC Rec
ICE
Ana Req
TEMP
Cust Seal
Ph

Instructions and Agreement Provisions on Reverse Side

DISTRIBUTION: ORIGINAL - LAB, Yellow - LAB, Pink - Client
REV 11/92 FORM 340

Order # 14241 9311303

CH2M HILL
QUALITY ANALYTICAL LABORATORIES

CHAIN OF CUSTODY RECORD AND AGREEMENT TO PERFORM SERVICES

CH2M HILL Project # SF035901.6W.ZZ

Purchase Order #

Project Name Coyote Creek, Reach 3

Company Name/CH2M HILL Office SFO

Project Manager & Phone # Mr. [ ] Ms. [☒] Dr. [ ] Lynne Hosley (510) 251-2426

Report Copy to: Ann Demorest

Requested Completion Date: 11/30/93

Sampling Requirements: SDWA ☐ NPDES ☐ RCRA ☐ OTHER ____

Sample Disposal: Dispose ☒ Return ☐

LAB TEST CODES

SHADED AREA – FOR LAB USE ONLY

Lab 1 #
Lab 2 #
Quote #
Kit Request #
Project #
No. of Samples
Page of
COC Rev
Login
LIMS Ver
Ack Gen

ANALYSES REQUESTED

RUSH

	Sampling Date	Sampling Time	Type COMP	Type GRAB	Matrix WATER	Matrix SOIL	CLIENT SAMPLE ID (9 CHARACTERS)	# OF CONTAINERS	Ag PACKAGE	Chloride	Soil Texture	REMARKS	LAB 1 ID	LAB 2 ID
✓				X		X	SS-1	1	X	X	X			
✓				|		|	SS-2	1	X	X	X			
✓				|		|	SS-3	1	X	X	X			
✓				|		|	SS-4	1	X	X	X			
✓				|		|	SS-5	1	X	X	X			
✓				|		|	SS-6	1	X	X	X			
✓				|		|	SS-8	1	X	X	X			
✓				|		|	SS-9	1	X	X	X			
✓				|		|	SS-10	1	X	X	X			
✓				|		|	SS-11	1	X	X	X			
✓				|		|	SS-13	1	X	X	X			

Sampled By & Title (Please sign and print name)
Date/Time

Relinquished By (Please sign and print name) Derrik Williams (Derrik Williams)
Date/Time 11/24

Received By (Please sign and print name) Garret Farmer GARRET FARMER
Date/Time 14:55 11/24/93

Relinquished By (Please sign and print name) Garret Farmer GARRET FARMER
Date/Time 11/24 16:08

Received By (Please sign and print name)
Date/Time

Relinquished By (Please sign and print name)
Date/Time

HAZWRAP/NESSA: Y N
QC Level: 1 2 3 Other: ____

COC Rec	ICE
Ana Req	TEMP
Cust Seal	Ph

Received By (Please sign and print name) Jack Kelly
Date/Time 11/24/93 16:34

Shipped Via UPS BUS Fed-Ex Hand Other____

Shipping #

Work Authorized By (Please sign and print name)

Remarks

Instructions and Agreement Provisions on Reverse Side

Order # 14241 303/38170 – 38205

CH2M HILL
QUALITY ANALYTICAL LABORATORIES

CHAIN OF CUSTODY RECORD AND AGR

SUBM #: 9311303
CLIENT: CH2MHIL
DUE: 11/30/93
REF: 14241

CH2M HILL Project #: SF035901.GW.ZZ

Purchase Order #:

Project Name: Coyote Creek Reach 3

Company Name/CH2M HILL Office: SFO

Project Manager & Phone #: Mr. [ ] Ms. ☒ Dr. [ ] Lynne Hosley (510) 251-2426

Report Copy to: Ana Demorest

Requested Completion Date: 11/30/93

Sampling Requirements: SDWA ☐ NPDES ☐ RCRA ☐ OTHER ____

Sample Disposal: Dispose ☒ Return ☐

LAB TEST CODES

ANALYSES REQUESTED

RUSH

Project #

No. of Samples | Page | of

COC Rev | Login | LIMS Ver | Ack Gen

	Sampling Date	Sampling Time	Type COMP	Type GRAB	Matrix WATER	Matrix SOIL	CLIENT SAMPLE ID (9 CHARACTERS)	# OF CONTAINERS	Ag Package	Chloride	Soil Texture	REMARKS	LAB 1 ID	LAB 2 ID
✓				Y		X	SS-14		X	X	X			
✓							SS-15							
✓							SS-7							
✓							CH-11 7.5-9							
✓							CH13 7.5-9							
✓							CH15 6-7.5							
✓							CH15 15							
✓							CH11 14-15.5							
✓							B-14 9-10.5							
✓							B-6 12-13							
✓							B-5 7.5-9							

Sampled By & Title (Please sign and print name) | Date/Time

Relinquished By (Please sign and print name): Derrick Williams (Derrik Williams) | Date/Time: 11/24

Received By (Please sign and print name): Garret Farmer GARRET FARMER | Date/Time: 14:55 11/24/93

Relinquished By (Please sign and print name): Garret Farmer GARRET FARMER | Date/Time: 11/24 16:08

Received By (Please sign and print name) | Date/Time

Relinquished By (Please sign and print name) | Date/Time

Received By (Please sign and print name): Jim Kelly | Date/Time: 11/24/93 14:34

Shipped Via: UPS BUS Fed-Ex Hand Other ____

Shipping #

Work Authorized By (Please sign and print name)

Remarks

HAZWRAP/NESSA: Y N

QC Level: 1 2 3 Other: ____

COC Rec | ICE
Ana Req | TEMP
Cust Seal | Ph

Instructions and Agreement Provisions on Reverse Side

DISTRIBUTION: ORIGINAL - LAB, Yellow - LAB, Pink - Client
REV 11/92 FORM 340